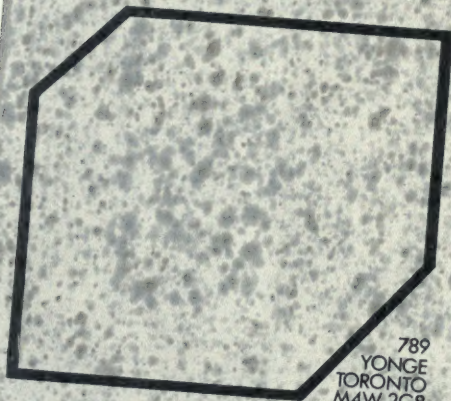


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VOLUME XXII

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FIG. 1717. GARDEN AT "GLEN LYNN," TORONTO, AFTER A SNOW STORM.

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* * JANUARY * *

BRIGHT GARDENS BENEATH BLEAK SKIES.

GROUNDS cheerful and attractive amidst frost and snow, are desirable more especially for farmers and for the large class of city folk, who are away from home in summer. Farmers have too much work in spring and summer to allow them to take much interest on the garden; but the crops in, and the fall work done, they have more leisure to enjoy pleasant surroundings. The fashion of city people, of taking a long holiday in the warm weather, has been very detrimental to their grounds. Householders, especially those who have the most money to spend on their surroundings, are away the whole season, or else long enough to make it seem not worth while to devote much time, thought, or money to the garden. Why, in winter, when they are otherwise shut off pretty well from the beauties of nature, should they not have at their very doors landscape pictures surpassing wild scenery? We should try to have things about us at their best when we can most enjoy them. It was this principle that in England did much to make the bedding-out system, with all its faults, a sensible practice. The Easter sun throws its beams, let us fancy, across the terraces of some storied manor-house, and plays

over rich harmonies of color. Warm masses of tulips, daffodils and pansies, light up the beds so lately bleak and bare. And why? The family which has been away for the winter is at home, and have many guests. The holidays over, the house is deserted and the garden languishes till autumn, when it is again dressed with bright flowers to greet more visitors. The best effects were thus secured there at proper times; and with us there is no need that our grounds should be gaunt and bare in winter, while we have at our disposal a great wealth of evergreens boasting rich hues of green, gold and brown, silver and blue, and trees decked with clustering berries of scarlet, white, purple and orange. The poor man can make a nice garden from what he can find in the woods, whilst his better-off neighbor can get all sorts of beautiful things from nurseries.

We would have the garden attractive both in bleak days of late fall and in the winter's snows.

These cold-weather or winter gardens, as we might call them, are not so desirable for residents of our smaller towns and villages, who, as a rule, are at home in summer time to enjoy their grounds. Still, even they might have a

small part of their grounds set aside for winter effects.

We are not advocating an original idea, but one that has been from time to time urged in horticultural journals. Forty-eight years ago there appeared in Downing's *Horticulturist* a description of a garden planned for winter beauty, in which "there was not a leafless tree in sight."

screened. The background of the picture, the plantation bounding the view, will be composed of rich masses of green of varied shades, warmed here and there with a glow of scarlet, and, like the stained panes of some cathedral, intersected at intervals by gleaming shafts of white.

For our greenery, nothing, it seems to us, can for the main planting surpass the hemlocks



FIG. 1718. EVERGREENS AT "HOLLYDENE," TORONTO, DEC., 1899.

Some persons would rather arrange their grounds so as to make pictures attractive from the windows of the house, whilst others would design them with an eye to the effect from the walk, from the street or road to the door, or with a view to display to the passersby. If a nice, bright outlook is desired, select the window from which you wish to have your view. Other things being equal, take a window commanding the bleakest part of the lawn, or objects that are eyesores and should be

with their light and graceful foliage. A Scotch pine or two or a Norway spruce or other low priced hardy conifer should be disposed here and there to break the monotony of color. The hemlocks are rather more difficult than most evergreens to transplant, and especial pains should be taken to protect their roots from sun and wind till they are well and carefully set in the ground.

For the glimmer of scarlet to light up and cheer the scene there is the bitter-sweet (*Cela-*

trus scandens), the most useful climber for winter effects. This has clusters of orange seed pods which, as they mature, break open and disclose the scarlet fruit. The segments of the pods do not fall off but curl back so that the berry clusters present two pleasing colors side by side. It will make a growth of ten or twelve feet in a single season and takes forcible possession of any young sapling that comes

ogues, but Messrs. Ellwanger & Barry offer it for sale at thirty-five cents a plant. It bears its staminate flowers on one vine and pistillate on another, so that to obtain a full crop of berries care should be taken to procure stock by division of plants. There is a Japanese variety with smaller berries much more scattered along the branches but still quite abundant. It grows well over rough places and makes an admir-



FIG. 1719. SUMACS AT "BENVENUTO," TORONTO, DEC., 1899.

within its reach. A few trees here and there should be given up to its tender mercies to form trellises as it were, over which it may hang its gay colored festoons. It grows wild pretty generally throughout Ontario, twining over bushes on river banks and in thickets. In the country the easiest way to get it would be to take it from the woods. In the city it would be less trouble to procure it from the specimens not uncommon under cultivation there. Our nurserymen do not mention it in their catal-

able mantle for a wall or rockery. It could probably be obtained from some of the leading nurseries of the Eastern States. However the native plant is easy to get and thoroughly satisfactory.

The third element of our background, the interesting shafts of white, will be supplied by the stems of the graceful birch. How well the birch contrasts with dark masses of evergreens in the wood! Why should we do without it in the garden? The white birches should stand

at the front of the boundary belt. So much for the background of our picture. The foreground will be left pretty open that the view may not be obscured, and the house may not be smothered as it were and rendered unhealthy by having too close a wall of trees around it. The middle ground and side borders admit of very varied treatment. There will be ranged trees and shrubs with bright colored bark or persistent berries and some choice evergreens. The precise arrangement of these must be left to the taste of the person planning the ground, but we will mention some of the materials that may be used.

Some willows we would choose for the color of their bark. The golden willow (*Salix vitellina Aurantiaca*) would be one of the best, and is not hard to obtain. *Salix vitellina*, a Russian variety, with yellow bark, and *S. Vitellina Britzensis*, and *S. Palmaefolia* with red stems, are other varieties obtainable from American nurseries at a cost of about half a dollar. Willows are fast growers and so are good for early effects. The red bark of the dogwoods looks well too against a snowy background. The Siberian (*C. Siberica*) is the best, having a more brilliant stem than *Cornus alba* or any other variety. Much brighter colors can be obtained from the dogwoods if the old stems are cut down level with the ground every spring. The suckers which will spring up will be of much fresher tints than older stems. Treated in this way the native dogwoods which can easily be got from swamps or the banks of streams will be fairly satisfactory. Clumps made up of willows alone or entirely of dogwoods, or groups in which both grow together, will all look well.

The native striped maple (*Acer Pennsylvanicum*), a small tree, 10 to 20 feet high, has an attractive trunk in winter, and the Kerria, sometimes misnamed the yellow rose, has a green stem though perhaps too slender to make much show. There is a dwarf variety, *Kerria ramulis aureis*, in the market with a stem striped with yellow and green. There are basswoods too with colored bark.

The forms of some deciduous trees are very picturesque in winter, and although it would take too long to grow them for our winter gardens, yet if they are already on the property it would be a pity to remove an oak or an elm or a beech to make way for evergreens. After the birch the beech is one of the most satisfactory of our larger trees for winter effects. The weeping variety with its great, tortuous spreading branches, is curious and interesting. The light colored bark of the beech takes away the sense of bareness that most other deciduous trees are apt to inspire, and makes it preferable to the dark trunked elm with all its symmetry or the gaunt form of the oak, despite its majesty.

The garden will have more interest if some trees and shrubs, with bright colored berries, are given a place. Of these, for city gardens, nothing can surpass Thunberg's barberry for planting in masses. It bears very profusely short clusters of bright scarlet berries, which, as they are less watery than the common barberry, do not shrivel or lose color so much, and indeed will remain full and fresh till spring. Its foliage is lovely in autumn, and in winter in contrast with snow or evergreens it is very pleasing. It is very hardy, and may be easily raised from seed. The fruit of *Berberis Amurensis* fall too early to make it desirable; but there are other good barberries, the common European variety, the Japanese, *Sieboldii* and the variety *Canadensis*. Unfortunately as it is a host plant for wheat-rust fungus, the barberry is not desirable for the farm-home grounds. At the Model Farm, Guelph, some fine barberry hedges had to be destroyed to prevent loss.

Other trees, with red fruits that remain for part or the whole of winter, are the Rowans, both the American, with orange berries, and the European, with smaller red fruit; the Thorns, of which the best are *Crataegus Crus-galli*, with showy berries, lasting all winter, and *C. Cordata*, the Washington thorn; the high-bush cranberry; the cotoneasters; some of the roses and the alders. The different kinds of *Euonymus* are most desirable for the late fall, and cannot be too warmly commended. A pretty group can

be made by placing the *Euonymus*, with its scarlet berries, and the witch-hazel, with its twinkling yellow stars, side by side in front of hemlock or Colorado blue spruce trees.

The best shrub with white berries is the Snowberry, which if grown in partial shade out of the full rays of the autumn sun will keep its berries fresh a long time. For black fruit the common Privet is the best. Groups of the

should be remembered that some evergreens, such as the *Arbor vitae*, that are attractive in summer are dull and uninviting in winter, whilst others, such as the *Retinosporas* seem to warm as the weather grows colder. Many too of the choicer evergreens are rather tender, and the planter would do well to write to the Director of Experimental Farms, Ottawa, for the catalogue (which is furnished free), of trees and



FIG. 1720. EVERGREENS AND BARBERRIES AT "HILLCREST," TORONTO, DEC., 1899.

Sumac with the crimson tufts look well after the snow falls. Fig. 1719 shows a group of these at the gateway of "Benvenuto," the residence of the President of the Toronto Street Railway. Glittering masses of the *Mahonia* with its glossy holly like leaves should be disposed here and there. The leaves are attractive all winter, and in spring are succeeded by pretty little clusters of yellow flowers.

In the choice of conifers, some of which should have a place in the middle ground, it

shrubs found hardy there. Nor should the garden maker forget that many long-lived evergreens are apt to early become unsightly. They become rusty or their lower limbs die. Mr. Parsons in his recent book, "How to plan the Home Grounds," mentions as being most free from this fault the white and Swiss pines, the dwarf *Mugho* pine, the red cedar and the Oriental spruce.

For a conspicuous position perhaps there is no choicer tree than a good specimen of the

Colorado blue spruce (*Abies pungens*). Hardy enough to endure a temperature 30° below zero without injury, it also puts up with the dust and smoke of cities better than other conifers. In ordering from dealers, a nice sage specimen should be asked for as only about one in thirty in the nursery now exhibits a striking shade. It has a pleasing hue, as if covered with bluish hoar frost. It must be given good cultivation or it turns green. The first year after transplanting it generally loses lustre, but it gradually recovers. There are many other choice evergreens which we have not space to treat of. *Thuja occidentalis*, *Peabody* and *lutea*, with their golden and chocolate brown winter robes, are the most brilliant in the large collection in Queen's Park, Toronto. For carpeting the ground beneath evergreens the *Periwinkle* is useful, and is easily grown.

The plan of the garden will be somewhat different from that we have indicated if the best effects are desired from the road or street outside the grounds, or from the drive or walk leading to the house. If the idea is to have

the property look well from the road, the grounds should have some low hedge bordering on the street, the centre of the grounds should be left open, and most of the trees and shrubs should be ranged along the side lines. Choice trees and shrubs would be planted at projecting points in the waving outline of the border masses. For the low hedge the *American Arbor Vitae* would be good, or if a choice, though more expensive one is desired, one of *Thunberg's barberry*, or of the Colorado blue spruce, will be highly ornamental.

Should the planter desire privacy, and to have the grounds look best from the approach to the house, he should plant some tall hedge, such as hemlock or Norway spruce, along the street, or if he can get plenty of rough stones he might build a picturesque wall and cover it with creepers. The walk to the front door of the dwelling might be bordered by a pretty hedge, and the plantation arranged with large trees in the back-ground and smaller ones in the middle space of the prospect as one approached the house.

Toronto.

A. E. MICKLE.



NOTE.—Buttercups were still flowering in Toronto on 1st of December, and a pink water lily was still blooming on 3rd of December, and even at beginning of same month some thirty carnations were in bloom in a garden.

CENTRAL EXPERIMENTAL FARM NOTES—No. 4.

WINTER has come since the last Farm Notes were written, and the lawn and fields are again covered with snow, though the weather has not yet been severe. There was an exceptionally open autumn this year, and winter not set in until December 4th, thus giving ample opportunity for doing work which in an ordinary season would have been left undone until spring. During this month the annual measurements are taken of the timber tree growing in

covering the ground that the evergreens become prominent features of the landscape at the Experimental farm; and there are now so many fine specimens to be seen there that a few notes on some of the most striking may not seem amiss. During the past eleven years no less than 346 species and varieties of conifers have been tested there, and the greater part of these are still alive. In the Arboretum these are arranged in groups by themselves, but on the ornamental grounds they are scattered among



FIG. 1721. GROUP OF EVERGREENS, IN ARBORETUM AT CENTRAL EXPERIMENTAL FARM.

the forest belts, the terminal growth and increase in diameter being recorded. The data which have been accumulated during the past few years are now becoming very interesting, and each year's records add to their value. This is the month also for preparing material for the annual report by compiling the notes made during the past season and making the necessary calculations for the tables which appear in it. There are many other matters also which winter gives the opportunity of attending to.

It is at this season of the year when deciduous trees have lost their leaves and the snow is

the deciduous trees or occupy but small clumps. In the forest belts are good size blocks of White, Scotch and Austrian pines, White and Norway spruce, and American *Arbor vitæ*, and these are becoming more conspicuous every year as they reach a greater height. It is in the Arboretum and on the ornamental grounds, however, where the trees are given more space to grow in, that the finest specimens are to be found, and where the graceful or stately habit of a tree may be developed at will.

RETINOSPORAS.

The Japanese *Retinosporas* are very little known in Canada, yet these graceful trees suc-

ceed admirably if given proper attention. They belong to the genus *Cupressus*, and are closely related to the Lawson's Cypress of California and Oregon. All the varieties offered for sale are forms of two species, *Cupressus obtusa* and *Cupressus pisifera*, yet in some of the varieties there is no resemblance to the species whatever, and it is only when a variety "sports" that the true parent is revealed. A few notes may help to distinguish these species and varieties.

thread-like pendulous branchlets. It is quite hardy and thrives well (Fig. 1721).

C. pisifera squarrosa—This is the least valuable of all the varieties of *C. pisifera* at Ottawa, as it is not perfectly hardy. Every winter it is more or less injured by sunscald, and on this account it is seldom that a symmetrical specimen is found. It is of much more dwarf and compact habit than the others, with short leaves of a pale silvery colour.



FIG. 1721. *CUPRESSUS PISIFERA FILIFERA*, IN ARBORETUM AT CENTRAL EXPERIMENTAL FARM.

Cupressus pisifera (*Retinospora pisifera*)—All the *Retinosporas* are ornamental, and this and its varieties form a very beautiful and varied collection. It becomes a good sized tree in Japan, but like its varieties it is more shrub-like in its growth at Ottawa. It is of pendulous form with bright green leaves and very graceful habit.

C. pisifera filifera—A very distinct and graceful variety with drooping branches and slender

C. obtusa—This is a native of the mountainous districts of Southern Japan, and attains there a height of from 60 to 100 feet. It is a pretty tree, but the specimens at the Experimental Farm have not developed enough yet to determine whether it will make a symmetrical tree here or not. The bright green of the upper surface of the leaves makes a fine contrast with the glaucous shades underneath.

C. obtusa aurea and *C. obtusa gracilis aurea*

are two of the most beautiful golden leaved trees yet tested. The yellow is of such a rich shade and the trees are so graceful that they make very striking objects on a lawn.

C. obtusa lycopodioides — So unlike the species that their relationship could hardly be credited at a casual glance. This is a compact,



FIG. 1722. *CUPRESSUS PISIFERA PLUMOSA*,
IN ARBORETUM AT CENTRAL EXPERIMENTAL FARM.

stiff branched variety with peculiar blunt dark green leaves. It is more curious than ornamental.

C. ericoides—Heath-like *Retinospora*. It is unknown whether this is a variety of the Japanese *Retinosporas* or a variety of the White Cedar (*Cupressus thyoides*) of the Eastern States. It is a pretty dwarf, compact shrub, only attaining a height of about 2 feet, with fine, soft, delicate green foliage, which becomes an attractive purplish tinge in autumn.

All the species and varieties of *Retinosporas* previously mentioned may be called hardy at Ottawa, with the exception of *C. pisifera squarrosa*. Some of the others are occasionally sunscalded on the Southern side, and when planted this should be taken into consideration and a place given them where they will be protected to a certain extent from wind and sun in late winter and early spring. The *Retinosporas* are comparatively slow growing trees, the tallest planted in 1889 being only about eight feet in height. The choices of the group are *C. pisifera filifera*, *C. pisifera plumosa*, *C. obtusa aurea*, and *C. pisifera plumosa aurea*. They are very desirable, and it is surprising that more of them are not planted.

W. T. MACOUN,

Horticulturist, Central Experimental Farm.

THE HYACINTH BEAN.

AS an ornamental climber the Hyacinth Bean, *Dolichos lablab*, is worthy of consideration. The plants start readily, grow vigorously, make a fine display of foliage, and bear abundantly large, bean-like clusters of showy lilac and white flowers. These are followed by purple-colored pods which enclose the seeds, various forms of which are shown in the little sketch. *A* represents a seed of *Dolichos giganteus*, a giant-flowered sort with large, black beans showing a white ridge; *b* shows the purple and *c* the white *Dolichos*; and *d* represents the brown seed of *D. bicon tortus*, the pods of which are curved like a ram's horn. All of



FIG. 1805.

these are useful where vines for shade and bloom are desired. *D. lablab* is also known as Egyptian Bean, having been introduced from Egypt in 1818. It may be treated as a hardy annual, the seeds being planted early in spring. Give them string support as soon as they show a disposition to run. The plants will run from fifteen to twenty feet high during the season.—*Parks' Floral Guide*.



FIG. 1723. ART AND NATURE BEAUTIFULLY COMBINED AT PATERSON, N. Y.

LANDSCAPE GARDENING—I.

LANDSCAPE Gardening, Landscape Architecture, or Landscape Engineering, are terms which are employed to represent a profession concerning which very little is understood by the majority of people.

Many have the impression that the landscape gardener's work only begins when the house is completed,—that it consists merely of grading, sodding, seeding, and planting. As a result of this popular ignorance there are many nurserymen, florists, and contractors who make this kind of work a part of their business announcements using one of the above titles, usually that of Landscape Gardener. This branch of the plant dealer's business gives an opportunity to use plants that may not at the time be in demand and of which they may have a surplus. It is in general their practice to give about the same treatment to all places, irrespective of characters or surroundings; to remove all natural rocks or bushes, grade to a smooth

surface, sod or seed, and then plant throughout the open spaces and along the walls and borders the common, usually exotic, plants, with an assortment of the horticultural forms that happen at the time to be in fashion and are easily and cheaply procured in the nurseries. Their attempts to go beyond the ordinary practice too often result in such offences to good taste as a rockery in the centre of a fine bit of lawn, which, as usually made, is and always must be a bare and ugly pile of rocks; or a discarded iron kettle in which nothing creditable can be grown, placed in a rustic tripod and the whole arrangement painted bright red; or useless walks and roads with unmeaning and unnecessary crooks.

There is an impression abroad — with many, a conviction—that there is a higher practice as a profession, by which finer and more original and artistic results are secured, but with this impression is the feeling that this practice is only within the reach of

cities or wealthy individuals, and is so far beyond the means of small property owners that it is not worth their time to look into it. This is a wrong impression, for even the smallest place is worthy the attention of the landscape architect, and there is as much reason for securing his services in the selection, arrangement, and construction of the grounds as there is in the employment of an architect for the buildings. A properly equipped landscape architect would be able to secure a much better result in every way, for the same expenditure of money that is required to lay out and complete the first planting of the place in an ordinary way. This higher practice of the profession should usually begin with the selection of the property on which a home is to be established, for the landscape architect in consultation with his client can often detect advantages and disadvantages that would be entirely overlooked by the ordinary observer, and, knowing the tastes and requirements of his client, can determine the amount of land necessary to carry out these requirements properly and thus often save a heavy expense in the purchase of additional land, found to be necessary after the first purchases are made, at a much increased cost over that first secured. The pieces of land in most towns with the greatest possibilities for the making of an original, interesting, and often unique place are very likely the ones longest neglected and least sought for, because their picturesque natural features or irregular surfaces will not lend themselves readily to the smoothing-out process which most land undergoes, or to square lots as laid out by the real estate agent with the assistance of the land surveyor.

I have in mind an old worked-out limestone quarry, in a dense wood, which is overgrown with ferns, vines, and bushes, and near it a summit commanding a fine view, with an open field sloping away from it. In another place a ridge of great angu-

lar fragments of rocks, which is shaded and carpeted by pines; near by, a pleasant slope, at the base of which is one of the finest white oaks I know. At another place a beautiful undulating surface, with splendid white oaks and chestnuts, and at one side a bit of meadow with a pool, surrounded by masses of barberry, blueberry, azalea, rhodora, and all the pretty plants and flowers that go with them. Another place there is a beautiful tree-fringed meadow,—a perfect little park in itself. All these are within less than a mile of railroad stations and with low valuations.

We may hope to see the time when such lots will be fully appreciated and such trees preserved,—not destroyed, as I know one splendid elm to have been, because to go around it a slight curve in a walk to the front door of a cheap house would be necessary.

In the selection of land, healthfulness should be one of the first considerations. It should be well drained—preferably a porous, sandy, or gravelly soil. This applies particularly to the land where the house is to stand, for nothing can be more unhealthful and disagreeable than a damp cellar, and when the condition is such that it becomes necessary to moor a raft to the cellar stairs to be used on occasions when one has to go fishing for coal and potatoes, it is not only unhealthful, but ruinous to one's disposition. Good sanitary conditions in the neighborhood are as important as good drainage. If it is thickly settled, the ground may be saturated from leaking cess-pools. Rubbish heaps, barn-yards, sink-drains, and vaults should be investigated and the purity of the water supply should be looked into. A pleasing outlook from the grounds is a very desirable feature; if not a landscape it may be a fine tree or a tree-arched street, or a bit of your neighbor's well-kept grounds. The topography of the land is also to be considered. A steep slope toward or away

from the road is expensive and difficult to build upon, but often very sightly and cool in summer and warm in winter, if on the right side of the hill. A gentle slope toward the road gives good surface drainage and an easy approach. A gentle slope away from the road is not bad, and if properly managed, a pleasing result may be secured with a house set below the road level. The most satisfactory result can often be obtained on an irregular piece of land, and very often the irregularities can be so utilized as to make construction more economical than on

a flat piece. Ledges and boulders often form very interesting and valuable incidents, giving the place an individuality which it would otherwise be difficult or impossible to secure. Masses of native trees and bushes, or individuals of either; an ancient and picturesque fruit tree; a vine-covered surface, are often of the greatest value and can be utilized to give results that could not be secured in years by artificial planting.

WARREN H. MANNING.

Brookline, Mass.

(To be Continued.)



ORCHIDS AT CHRYSANTHEMUM SHOW, TORONTO.

Photo by E. E. King

THE FLORISTS' EXHIBITION.

THE tenth annual floral exhibit by the Toronto Gardeners' and Florists' Association was in no way behind previous displays. A writer in the *Toronto Mail* says of it:

The chrysanthemum is still held a hot favorite by the flower-loving public, and deservedly so.

The indifferent spectator might be excused for not going into ecstasies over the ordinary plant with the ragged head and one eye, as first introduced to the civilized world, but the person who fails to see real beauty in the great compact blooms of white, pink, or yellow, such as are shown in profusion at the Pavilion, misses a rare pleasure. The "craze" in this variety of flower just now is to

force one magnificent bloom as large, round, and perfect in every way as possible. The big plants with five or six dozen blossoms are being relegated to the background, and comparatively few are on exhibition. The bloom with the long tangled petals growing in apparent abandon—a native of Japan—is still very much in demand, and comes in for a lot of admiration. The Chinese variety, however, with the petals turned in, making a quilted effect, and growing very large, round, and compact, is considered by many to be nicer, but of course it is purely a matter of taste.

Miller & Sons, the well-known Bracondale florists, are showing cut blooms, one of which deserves special note. It is named the "Timothy Eaton," is pure white, almost as round as a ball, and measures 21 by 23 inches. Mr. Miller is justly proud of this bloom which he claims is a world's record for size, and \$1,000 would not tempt him to part with the stock.

To many the most attractive exhibits are the groups of foliage plants, including chrysanthemums, palms, ferns and orchids. There are a number of these, each limited to 90 square feet, and a lot of ingenuity is manifest in the attractive manner in which they are displayed. The city's

exhibit occupies a central position on the stage, and possibly comes in for more encomiums than the others. It includes some very rare species, which it is questionable if they could be duplicated on this continent. The chrysanthemum may be queen, but the orchid is certainly the king of the floral world. A very fine specimen of the "Cattleya Dowiana" has a rich purple bloom with bold stripings. Some splendid specimens of the celebrated pitcher plants, which prove so useful to thirsty travellers in the tropical countries, are also to be seen.

While the show was opened yesterday, the cut-flowers, such as roses, carnations, violets, and the design work, are to be seen for the first time today.

The arrangements for the public are very convenient. There is plenty of room to move about down stairs, while in the gallery there are seats where one may rest and listen to the sweet strains of the orchestra.

Hon. G. W. Ross was present in the afternoon to formally open the show, but the arrangements had not been quite completed, and as the Premier was unable to wait the ceremonies were postponed.

THE BITTER ROT OF THE APPLE.

WE ARE amazed at the multiplying difficulties which beset the devoted fruit grower.—As if it were not enough to spray for codling moth, apple scab and grape mildew, we are now having added a most destructive fungus, the bitter rot of the apple, which develops from spores floating in the atmosphere, lodging on the skin and there taking root. The thread-like mycelium works its way through the cellular tissue of the apple, destroying its texture, causing brown spots in the flesh which show even through the skin. An apple affected with this spot may appear fairly well, but if pared or cut these spots under the skin will be found to extend far toward the core, and if numerous, they will entirely unfit the apple for any use whatever.

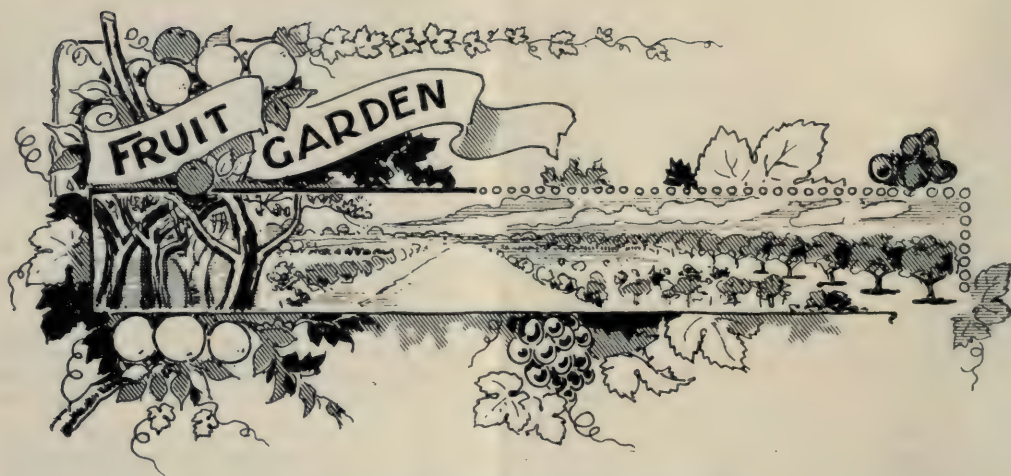
At Maplehurst we first noticed this evil on Baldwins grown on the bank of Lake Ontario. It was several years ago that we observed it first on a few trees, but it has

gradually extended from one orchard to another and threatens to become a most serious evil.

The remedy recommended is the now well known Bordeaux mixture, which is so dirty a mixture to handle that many persons will not apply it. Fortunately for such gentlemen, the spramotor people have invented a protection just under the nozzle at the top of the pole, by the use of which all leaking bordeaux is shed off, leaving the pole always perfectly dry and clean for handling, without gloves.

The first application must be made soon after the buds begin to swell in the spring; the second, when the fruit is about the size of marbles, and the third when nearly grown.

THE O. A. C. REVIEW is now published in magazine form, and is a very creditable college magazine.



THE CITY FRUIT GARDEN.

I COME before you as the representative of the Ontario Fruit Growers' Association, or, as it should be called, the Ontario Horticultural Society, for we have long ago ceased to confine our attention to the orchards and fruit gardens of Pomona, and have been led out into the domains of beautiful Flora, and even farther, into the sylvan glades of Faunus.

We welcome you as an affiliated society, and congratulate you upon accepting the broad and liberal policy of the Agricultural and Arts Act in its widest interpretation, and upon your agreeing with us that it is better to so utilize the munificence of the Department of Agriculture as to give the greatest good to the largest number, instead of making large gifts to a few prize winners.

Three years ago, four of our directors proposed the encouragement of affiliated horticultural societies, believing that our whole work would thereby be strengthened, and all persons directly benefited. The plan has been received with universal favor. The Minister of Agriculture views it with favor, our Association is ready to help each

local society in every possible way, and the societies themselves are ready to co-operate with us to make our journal a greater success, and of wider scope.

You have an important work to accomplish. It is not the education and encouragement of a few specialists by giving them large money prizes, but the diffusion among the masses of a taste for the ornate as well as the useful in horticulture. I come myself to speak more especially upon the latter, having spent all my life, since my college days, in the study and practice of fruit culture, and withal feeling I am but an amateur.

THE GARDEN AND LAWN.—What pleasant associations are suggested by the words! Do not the words remind you of some delightful retreats away from the crowd, away from the burning sun; a place of rest and refreshment, especially for those men and women whose time is spent in the office, behind the counter or in the workshop; for here the birds sing, the air is pure and the flowers give forth their fragrance. Those dread enemies of humanity, blasting fever and wasting consumption, take their flight from those homes whose

inmates live much in the pure air of heaven, and make free use of the luscious fruits of the garden.

I take it that I am addressing amateurs, and I do not even dare to call myself a professional. Amateurs you must be to succeed. I mean you must be lovers of the garden to succeed with it. Do you remember what Ruskin says in "Queen's Gardens?" "You have heard it said (and I believe there is more than fancy in that saying, but let it pass for a fanciful one) that flowers only flourish rightly in the garden of some one who loves them." He is applying this truth to humanity, neglected about us, but I take it in its literal application. I apply it to the fruit or the flower, or the house plant. Unless you love it and so nourish it, you cannot attain the best success.

Another secret of making your garden and lawn a thing of pleasure and delight is that it should be your very own. I do not mean simply by ownership, but the evidence of your own labor, with your own hands. The gardener may do better work, but it is not so much yours unless you do it all, or at least a part yourself. You will be more interested thereby, and it will be more to you. You may despise the labor, but that will be the very secret of your highest enjoyment.

But enough on general lines. Now I will try to give you some hints for the fruit garden, and name some things which may be suitably planted in it.

First, its site is too often chosen without regard to the lawn. I would favor it being made an extension of the lawn; not fenced in by high boards, but only screened from the front by an ornamental hedge, and most easy of access for the family and visitors. Unless it can be a place of beauty, worthy of the presence of visitors, it had better not exist.

The object of it is twofold: First, the

joy in the very garden itself, in watching and directing the growth of the trees, and in eating the first ripe fruit from each tree, and studying the relative value of each; and second, the advantage of its products upon the table. No such fresh, delicious fruits can be purchased in the markets as can be brought in direct from the garden, just gathered when at its very best. What more inviting table ornament in the autumn than a plate of assorted red, white and black grapes. They look almost too good to eat, and remind me of the Irishman who in his country never saw fruit on the table, except for ornament, and when he saw a Canadian taking off a whole bunch of grapes, cried out, "Oh moi, he's aitin the bokay."

Apples I would no longer plant in a city garden. They take too much valuable space, and the best are so cheap in our markets. If I had apples in a garden of limited space I would have the trees dug out, root and branch, and used for firewood. It is even a question now-a-days whether it pays to grow apples in the field for export, and, unless the present efforts of the Department of Agriculture in opening up new markets are successful, there is surely little, if any, money in growing apples; I might also say in fruit growing of any kind.

Pears are more desirable, for the best table varieties cannot always be purchased in our markets, varieties, for example, such as Doyenne d'Ete, Giffard, Rostiezer, Petite Marguerite, Louise, Clairgeau, Sheldon and Anjou. The Bartlett you can always buy, for growers plant immense orchards of it, and last year you could buy that variety for 25 cents a basket. So you need not plant it, nor the Duchess, a good pear, but constantly on sale. Pears for a small garden should be grown on quince stock, which makes them dwarf, and occupy but little room. These you can plant about twelve feet apart each way. To get the

best results, careful training will be necessary. From the very first aim to produce a pyramidal shape by encouraging one upright leader, and cutting back the side branches to a line drawn from the apex of the tree to the ground at about an angle of 45 degrees. Every year the new growth needs to be cut back one half to two thirds, and thus fruit spurs will be encouraged instead of long barren stems.

No part of your fruit garden will be of more interest to you than this dwarf pear plot, for it will be both beautiful and useful. When I speak of dwarf pears, I think of one of the first presidents of our Association, an enthusiastic cultivator of dwarf pears, at that time a citizen of your town, who had nearly every variety of pear in cultivation, and became quite an authority on varieties, though only possessing a small garden. I refer to the late Rev. R. Burnet. No doubt some of you remember him, and possibly you even know of his garden, in which no doubt his pear trees still survive him.

And now I want to refer to a fruit which every citizen may cultivate, for it will climb a fence or an alley wall. I mean the grape, one of the most wholesome of fruits, and the vine is so cheap and will so early yield fruit, that even the tenant may well plant it in his back garden. A vine each of the following would give a succession of delicious grapes for the table from September 1st, until Christmas, or even longer. I name them in the order of ripening: Moore's Early, Lady, Lindley, Wilder, Delaware, Diamond, Salem and Vergennes. The last two varieties might be kept well into the winter for table use. There is no secret about keeping them in good condition, except a moderately low temperature and in moderately humid air, or wrapped in oiled paper. If the cellar is warm and dry they will shrivel up.

The vines may be trained to climb a wall

and left without pruning, but it is far better to shorten back the new growth every year, except of course the main leaders to cover the wall. If trained on the wire trellis, the neatest method is to run two arms on the lowest wire and train uprights from these to the two upper wires. Another simple method, known as the Kniffen System, is to run out two or four arms on the higher wires and let the young wood hang down. This latter is called the "lazy man's method," but anyway it is a very good plan where it is not necessary to lay down the wood in winter.

The cherry is well adapted to the city fruit garden. The tree is ornamental in habit and in bloom, and the fruit both attractive and marketable. The fruit cannot always be purchased in the market at its best; like the peach and plum it is most luscious when gathered from the tree at the nick of time when it is just at its best. The market gardener picks his cherries on the green side, and they do not improve after gathering, so you seldom get them at their best from the green grocer. The cherry must have sandy soil for the best success, but whatever soil, it must be dry. If not too close in texture, it will not need much cultivation, so you can plant the cherry along the border, if you choose, but, if the ground is hard, you must either dig about the trees or mulch them well. For a succession I would plant Governor Wood, Black Tartarian, Napoleon, Early Richmond, May Duke, Montmorency, Elkhorn, Windsor and English Morello. The cherry does not need much pruning. Indeed, if you cut it very much, you will injure its vitality. There is no fruit more profitable, and a small garden planted with cherries will give you good returns.

Of small fruits I cannot encourage the growth in the home garden to any great extent. Blackberries and raspberries are too full of prickles and too unsightly to add to

the attractiveness of the home surroundings, and had better be banished even from the back yards; the fruit is cheap and can be purchased at less than you can grow it. The only fruit of the kind I would grow would be strawberries. These you want fresh from your own vines to have them at their best, and you cannot always depend upon your

fruiterer for them. They will repay the highest cultivation and give wonderful yields of fruit. Try Clyde, Bubach, Saunders and Haverland, or some of the other highly recommended varieties, and see how well you will be repaid.

L. WOOLVERTON,
Before Hamilton Horticultural Society.

NOTES ON SMALL FRUIT CULTURE.

GOOSEBERRIES.

I have tried a number of sorts the past few years with following results:

INDUSTRY.—This variety with me has been a complete failure. It is a very poor grower and not productive enough to be worth growing.

DOWNING.—Has been our main market variety. It is a good grower, fair size and very productive with me. It has never mildewed although I have tested over 20 years.

WHITESMITH.—Very large and very productive, but some seasons it has mildewed so badly it was useless. The past season it was perfectly free from mildew.

PEARL.—I received the plants from Fruit Growers' Association, a small plant by mail. They have grown very rapid and borne heavy crops, some bushes yielding 12 quarts each. I have about 50 of them. They have shown no sign of mildew so far. Fruit fair size, somewhat larger than Downing and a much better flavor. The bushes are more open and much better to pick. I am digging out the Downing and replacing them with Pearl.

Two years ago I planted some of the Columbia and Chautauqua gooseberries. Both those varieties have borne heavy crops of very large fruit and good quality, no mildew, but they have made a very slow,

poor growth of wood. I think I have let them bear too much.

RASPBERRIES.

CUTHBERT.—One of finest of berries but they have winter killed so badly with me that I have had to dig them all out. I think my land was too rich for them and grew the wood too fast and soft.

SHAFFER.—This variety has done remarkably well with me. It has winter killed but little and borne magnificent crops of very large fruit of good flavor. Fine for family use and home market, but too soft for shipping.

MARLBORO.—Fruit large and very firm, good bearer and hardy, but the bushes are poor slow growers, and consequently not a profitable sort with me.

CONRATH.—Received from Fruit Growers' Association. This has done remarkably well with me; I think it the best of all the black caps. Berries good size and firm. Flavor good. Bushes good rapid growers and perfectly hardy.

LOUDON is the best red raspberry I have yet tried. It is very large, very solid and very productive. The bushes are perfectly hardy and good growers.

Notes on Strawberries and Currants later on.

St. Marys, Ont. S. H. MITCHELL.

THE WHITBY MEETING.

AS USUAL, our annual meeting last month was well sustained by the presence of the foremost fruit growers in the province, the leading spirits in horticulture from our Agricultural College and the Central Experimental Farm, and by some representatives from our sister societies.

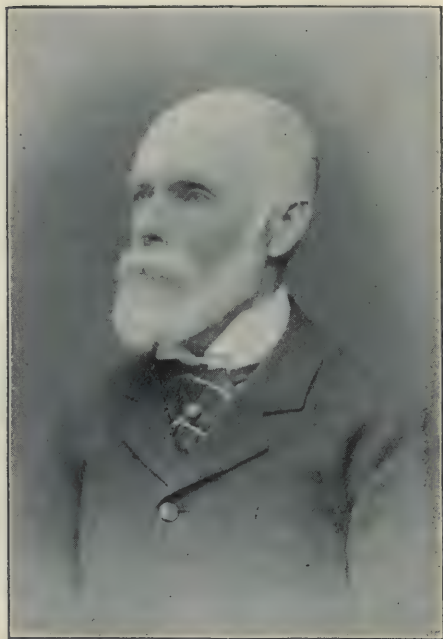


FIG. 1725. W. A. WHITNEY, IROQUOIS.

The meetings of the first day were held in the City Council chamber, and were called to order by Vice-President W. M. Orr, of Fruitland, the President, Mr. W. E. Wellington, being absent on a tour to Great Britain.

Fruits Hardy along the St. Lawrence were treated on by W. A. Whitney, of Iroquois, who drew attention to the excellent keeping qualities of the Fameuse and other varieties grown in that district. Next to the Fameuse he mentioned McIntosh

Red as one of the hardiest, and valuable also for size, beauty and quality for dessert, but it drops early and is subject to the apple scab. The Ontario promises to succeed, and the Scarlet Pippin, which originated at Maitland, is a most desirable new variety, the originator, Mr. Harold Jones, having found a special demand for it as a dessert apple in Montreal. The Wealthy is also a great success, being hardy and free from scab, but must be thinned to secure good size.

Few pears will succeed; the Kieffer and the Flemish Beauty being among them; of plums he spoke highly of Lombard, Saunders, Glass and Yellow Egg, having been grown with success.

Mr. E. C. Beman, of Newcastle, spoke of pears for the professional and amateur, giving a technical description of several kinds, and was followed by our new director for Bruce and Grey, Mr. J. I. Graham, of Vandeleur, on Irrigation and Top Grafting. This gentleman has natural facilities for turning water on his orchards, and has utilized them in such a way as to produce the finest sized fruit, even in the seasons of greatest drouth. He had also some excellent results in top grafting which drew out an extended address from Mr. G. T. Powell, a noted horticultural lecturer from New York State, from which address we give the following notes:

By Top Working in propagation we can bring a Spy in earlier bearing, and make the King more productive. The wood of Spy is exceedingly hard, as is shown in the work of pruning this variety; it therefore forms an excellent stock for the more succulent wood of the King. Special selection of scions is of far more importance than usually supposed. Nursery men usually cut scions from young trees, which are in the wood producing age, and consequently this

tendency is emphasized from year to year, and our orchards become late in bearing. Scions should be cut from bearing trees, and from those which bear most abundantly, in order to propagate this characteristic. So also there are great possibilities in the way of propagating characteristics of size of fruit, color, flavor, etc. King scions chosen from the typical orchard tree and set on young Northern Spy trees gave fruit of even size, fine color, and bore at an earlier age. One tree for example yielded two barrels of fruit at the age of eight years. A Sutton Beauty tree, similarly treated, two years top grafted, gave two bushels of fruit.

The Kieffer pear had proved a good stock for Anjou and Bosc. The union was perfect, and promised to endure well. Anjou on Kieffer was much more productive than ordinarily; indeed the fruit needed to be thinned to prevent overbearing. The Bosc had succeeded almost equally well, and these two he valued most highly of all pears for shipping purposes.

Another important point emphasized by Mr. Powell was high tillage until July, to be followed by cover crops such as Crimson Clover, or Cow Peas, to be plowed under the following spring.

Mr. E. B. Edwards, of Peterboro, gave an interesting account of the excellent results in securing fine crops of Blenheim Orange apples as a results of tillage and spraying under the direction of the Government Superintendent of Spraying; and A. H. Pettit, of Grimsby, drew attention to the damage done the fair name of Ontario by allowed fraudulently packed apples to go forward to the British market. The secretary read a letter from President W. E. Wellington, saying that he had visited Covent Garden Market, and was much chagrined at finding the disfavor into which Canadian apples were falling owing to this evil practice on the part of speculators. A

strong resolution was passed by the Association pressing upon the Dominion the extreme importance of taking some action in this matter, by appointing inspectors at shipping ports with power to detect fraudulent packing, and prevent its export or at least erase false brands and fine the offender.

Prof. J. W. Robertson, of Ottawa, gave a most valuable address on the "Com-



FIG. 1726. HAROLD JONES, MAITLAND,
Originator of the Scarlet Pippin.

merce in Large Fruits," showing good success in 1899 in exporting pears. One hundred and forty-five twenty-four pound cases of especially fine Bartletts for example had sold in Great Britain at \$1.97 a case, netting the grower \$1.54 a case. The points required to ensure such prices were prime quality, large size, and fine condition on arrival. The best sizes were from two and a half inches in diameter upward, such as would require sixty or seventy pears to a

case. They must be picked at the right time, just when the seed is turning brown, never while it is still green.

For apples, even fancy summer varieties, a case holding 40 or 50 lbs. is best. A No. 1 stock, wrapped and packed in 40 lb. cases sold at from 7 to 9 shillings per bushel; but the British markets have no demand for small apples.

Another important point is to have large lots of one sort and one grade for best



FIG. 1727. W. W. DUNLOP, OUTREMONT,
Sec. Que. Poml. Soc.

results. Canadian shippers forward too many varieties in a shipment to get bids from the best buyers. The growers should forward only large, sound apples uniform in size in each package, and these only. The second-class stuff and smalls must be otherwise disposed of; it had better be consigned to the manure heap than shipped, and more money would come back to the country for the selected portion than for the whole.

The cold storage facilities for fruit on steamships are likely to be improved so as

to provide small compartments holding two or three carloads each. Better ventilation of holds for apple storage in 1900 is also promised, but all these provisions will be unavailing unless it is someone's business to look after them at time of loading. With care, skill and honesty, ultimate success in the export of fruit is assured.

For success there should be established a standard of (1) sizes, (2) of form, and (3) of variety; the name of both packer and grower should be placed on every package in order that the grower might be informed in case a packer or shipper put up his fruit fraudulently. Of course the packer alone would bear the blame and suffer loss in such a case, but it would serve a good purpose to have all this information on the package. The punishment for use of false brands might be confiscation of goods so put up, or at least removal of the grade marks and an exposure of the offender.

The San Jose Scale question was up for discussion, being introduced by Mr. M. Pettit, of Winona, and the vigorous action that has been taken by the Provincial Department of Agriculture in endeavoring to stamp out the pest, high eulogised. A resolution was passed favoring permission to treat moderately infested trees with whale oil soap, crude petroleum or fumigation, under the direction of an inspector.

Dr. Saunders, director of the Dominion Experimental Farms, addressed the meeting on New Hardy Hybrid Apples in Manitoba, showing some wonderful results obtained by crossing *Pyrus baccata* with Duchess and with Tetofsky. The Doctor has long been foremost of horticultural experts in Canada in this important field of producing new varieties of fruits by hybridization, and results of his work may be expected which will be of inestimable value to our North West. The Doctor also spoke on our Ontario fruits in Manitoba, showing what an excellent market was opening up for us,

especially for our Concord grape. He also described the excellent work in progress of preparing a display of Canadian fruits for the Paris Exposition.

Dr. Hare, of Whitby Ladies' College, and Mr. J. E. Farewell and Mayor Routledge, of Whitby, gave excellent addresses; Mr. A. W. Campbell, Provincial Road Instructor, and R. Dawson Harling, agent of the Manchester liners spoke on their special spheres of work. The latter speaker gave fine stereopticon views of the new Manchester Ship Canal, a route of interest to Ontario fruit growers, since it opens up the whole interior of England to our goods.

It was cheering to have with us three delegates from the Quebec Society, viz.:

the president, Mr. C. P. Newman, of Lachine Forks; the secretary, Mr. W. W. Dunlop, of Outremont, and one of the directors, Mr. R. W. Shepherd, of Como. This latter gentleman has had considerable experience in exporting a special grade of fancy apples for private orders in the Cochran case, reaching a class of people in this way who do not hesitate on account of price, providing they get the article wanted.

This reciprocity of visits and interchange of thought is mutually helpful, and we hope it may long be continued. We are pleased to show our readers the face of Mr. Dunlop, the secretary, and hope by and by to have the same privilege with Messrs. Shepherd and Newman.

TOP GRAFTING A PARTICULAR ART.

INDISCRIMINATE top-grafting won't do. As well as seeing that we have a robust tree and a good live scion, there should certainly, in my experience, be some approximation as to vigor between the tree grafted and the graft, and also a similarity of wood. For example, if we stick a scion of the Ben. Davis (a very vigorous grower here) on a Scott's winter (a spindling slow-growing tree here), what have we the first autumn even? An unsightly joint, looking about as well as a man's hat on a child's head; and in the second year the vigorous scion is so top heavy, has so outgrown the limb of the tree to which it has been united that it cannot stand the force of any wind and breaks off at the joint, thus rendering your time, labor and outlay worse than useless. There is much to be understood before we have this grafting business down to perfection, even if it is an art which the world has known for thousands of years. Not only must we employ with a view to secure good fruit from poor trees; not only must we strive to better the coloring and texture and flavor of already fairly good fruit by a nice adaptation of suitable cions, but we must see in all this that the wood

consideration is attended to and vigorous scions put on vigorous trees and *vice versa*. The graftsmen who go about now, while they do a good enough job if making scions grow at all, do not understand this important matter as it should be understood—as the breeder understands for instance the coupling of his animals in proper lines to develop all the perfections of the breed—and hence it is that many orchardists who thought to have dead sea fruit turned into a delight to the palate and a good seller are disappointed to the very point of disgust. "Oh, anybody can graft!" is the cry of the amateur once he has seen it done, and certainly about anybody can stick on scions which may grow but which are likely to render the last state of his orchard worse than the first. To graft intelligently and with success as the result sought after, we want without doubt the best trained, most intelligent and most skillful scientists possible, and they must be as honest as they are expert also, or the transformation of unfruitful orchards into fruitful, paying ones is still a desideratum for the distant future to satisfy. Meantime every grower of fruit should consider this matter seriously. A. E. BURKE, Alberton, P.E.I.

ORIGIN OF THE MCINTOSH RED.



FIG. 1728. ALLAN MCINTOSH,
Originator of the McIntosh Red Apple.

SIR,—At the annual meeting at Whitby of the Ontario Fruit Growers' Association, the McIntosh apple came in for a good deal of praise by all who spoke of the best and hardiest apples. This has reminded me of a long delayed purpose of sending you two photos of the originator of the original tree, with a short sketch of his life.

From a manuscript autobiography now before me. I find that Allan McIntosh was born on the 24th of August, 1815, and some one of the family has written in the magazine, "Died Feb. 3rd, 1899." His grandfather was a farmer on the Mohawk river, in New York. His father came to Canada at the age of 18, and in the year 1811 settled on the lot in Matilda Township, ever since occupied by the family.

In clearing away the second growth for a building place, he came across some young

apple trees, which he spared. One of these was the original McIntosh Red apple tree.

His son Allan, about thirty years ago, began to propagate it, and the nursery is still being carried on by his son Harvey. It will be seen in the cut that the tree, and the man standing by, are both decrepid in appearance. The homestead was burned a few years ago, and the tree barely escaped with a little life on one side. I believe the old tree has now ceased to stand.

Let us pay a deserving tribute to the man who has done so much for our fruit interests, by preserving his memory in the pages of the Horticulturist.

Iroquois.

W. A. WHITNEY.

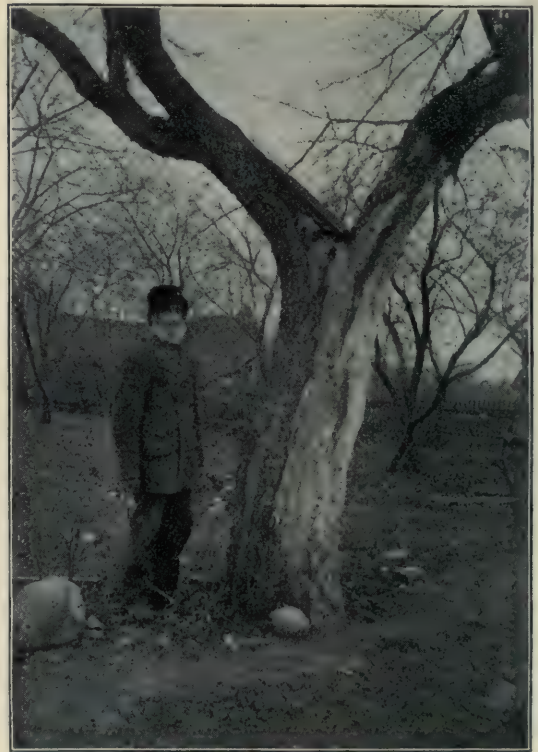


FIG. 1729. THE ORIGINAL MCINTOSH RED
APPLE TREE.

ONTARIO ROGERS GRAPES IN MANCHESTER.

FAILURE having attended the previous efforts made to introduce our Canadian grapes into the British markets, owing to the varieties selected for the experiment, the Board of Control of Fruit Experiment Stations of Ontario, acting under instructions received from the Minister of Agriculture for the Province, instructed the secretary, Mr. L. Woolverton, to make an experimental shipment of black and red Rogers to B. W. Potter & Co., Manchester, England.

The Concord and Niagara grapes were not only distasteful to the British palate when compared with Hamburg, Chasselas, Tokay, or even Almeria grapes; but they were also unsatisfactory shippers, being easily crushed, easily loosened from the stems and subject to mould. The several carloads of these former kinds which were placed upon the British market created a strong prejudice against Canadian grapes and led dealers to strongly discourage any further attempts to introduce them.

The writer was perfectly confident that certain varieties of Rogers' Hybrids, such as Lindley, Agawam, Wilder and Salem had both the keeping qualities and the excellent flavor which would ensure an ever increasing demand if once introduced. He therefore made up 515 cases, chiefly Lindley, labelling them all Rogers' Red or Rogers' Black as the case might be, for simplicity's sake. The cases were the same size as the pear cases, about 5 inches deep, 2 feet long and 1 foot broad. Four veneer baskets with wire handles, holding about $4\frac{1}{2}$ lbs. of grapes each, were placed in each of these cases, and into these the grapes were carefully packed about October 1st. Each case therefore contained from 18 to 20 lbs. of grapes, and having been allowed to stand about a

week before packing, the stems were well dried and in condition to resist mould. The steamer Manchester Port, on which cold storage space had been engaged for the consignment, was taken for service to Africa and consequently the fruit did not leave Montreal until November 5th.

Now, while the returns from this venture have not been a financial gain, owing to the strong prejudice against their introduction, the accompanying reports from the consignees, from Peter Byrne, Ontario Government agent at Liverpool, and from the British press, combine to show that we have scored a real success, which, if persistently followed up will be a great financial gain to Canadian grape growers.

COPY OF LETTER FROM MESSRS. B. W. POTTER & CO.,
MANCHESTER, ENGLAND, REGARDING CONSIGNMENT OF GRAPES.

Manchester, Dec. 2nd, 1899.

Sir:

We confirm our letter of the 27th ult., and now beg to report fully re grapes ex "Trader." The fruit sold in lots at an average price, taking the bad crates with the good ones, and as all the marks had faulty baskets, it was impossible to discriminate. If we had to choose the varieties we should say that Rogers' 15 and 44 carried the best. In some cases the baskets had been filled too full and the top bunches being crushed spoiled the look of all. The black variety would as a rule take the best, if in good condition. The cases should be marked plainly "Black, or Red, etc." We do not consider the paper over the top of the basket an improvement.

The fruit did not appear to deteriorate in our cold air stores (kept at 8 degrees above freezing point) and in the open air market two or three days did not hurt any of those in good condition to start with. Some shopkeepers say they do not not keep in the shop, but we feel sure that if the grapes are emptied out of the baskets and any bruised ones cut off they will keep for some days and improve.

As we said in our last letter, the flavor suits some people, but others do not like it at all. The former, however, are quite numerous enough to make the sale, now they are known, quite easy at a price that would certainly rise as sellers gained confidence, and we think that even when other grapes are at their cheapest you could realise a paying price. Hawkers and shopkeepers who would only pay from a sovereign to thirty shillings a score crates last week had paid up to sixty

shillings this week. We sold quite a number of baskets to interested parties who called at our office at 1s. to 2s.

If we had reported to you during the first three days after arrival, we should have said the trial was an utter failure. We could not get a bid from shopkeepers or hawkers, and it really seemed as though we should have to give them away literally, especially as some of the crates were running. This state of affairs naturally made us anxious to get them off our hands, so when the barrowmen started bidding 20s. a score crates, we let them go and gradually worked up to 40s. At these prices they were thoroughly distributed all over the district. We kept back some fifty crates until this week just to test their keeping qualities and to see how the public took to those sold. They kept well and we made from 2s. 3d to 3s. per crate as mentioned above.

It is most unfortunate that the shipment was all crowded into one steamer and was so much delayed, as it now really looks as though a second lot would have paid the loss on the first. We enclose cuttings from various papers.

COPY OF PRESS NOTICES.

Grocers' Review, Nov. 28th, 1899.—“Success has attended the experimental shipment of grapes to Manchester. We have received a sample basket of the grapes, which the Ontario Government is introducing into this country, from Messrs. B. W. Potter & Co., produce brokers, 7 Corn Exchange Buildings, Manchester, and can testify to the excellence of the fruit.”

Manchester Guardian, Nov. 14th, 1899.—Messrs. B. W. Potter & Co., produce brokers of 7 Corn Exchange Building, Manchester, inform us that the Government is making use of the refrigerating chambers which are fitted on the steamers on Manchester-Canadian line to introduce fresh fruit, grown in Ontario, into this country. An experimental consignment of grapes has been shipped by the Manchester Trader, due in the canal next Saturday. Great care has been exercised in the choice of the suitable variety, and the grape chosen is a hybrid between the best European and American species. It is grown in two colors—red and black—and is said to be of a large size and rich flavour. The packing has received particular attention, and the fruit has been put up in small ‘vener’ baskets with handles, each basket containing about 4 lbs. The result of the experiment will be watched with interest.”

Daily Mail, London, Nov. 28th, 1899.—“There is every prospect of a cheap supply of grapes being put upon the English markets in future years during the autumn and winter months. Already the test shipments of these fruits, carried in refrigerated chambers, are on show at Manchester, and the trade expresses much satisfaction at the salable nature of the fruit. There can be no doubt that this great development of the Canadian fruit trade in the United Kingdom will do much to extend the demand for cheap late grapes, for hitherto the middle and working classes have had to depend upon the hard Spanish Almerias, which are sent into our ports packed in cork-dust in barrels

weighing from 50 lb. to 60 lb. gross. These are the well known green grapes, so popular with grocers and tried fruit traders. The Canadian supply will ensure ample quantities of luscious, aromatic grapes of far superior quality to the Almerias and at a reasonable price. These new grapes have already produced a bit of a sensation in fruit trade circles, for when arrangements have been completed the English markets will be kept well stocked with regular shipments of fresh grapes put in dainty little baskets, and thus render the storage of Almeria grapes by market men, to ensure supplies after Christmas unnecessary. The quality of the fruit is excellent, and it is highly satisfactory to know that Canada can send to this country all late cheap grapes we need. Although, as previously announced in the ‘*Daily Mail*,’ the Canadian fruit exports will introduce the finest pears that are grown, yet the addition of late grapes by no means exhausts the list. Various other fruits are to be sent in time, and the French, Spanish and Dutch shippers will find many of their fruits displaced by the superior products despatched from Canada.”

COPY OF LETTER FROM MR. PETER BYRNE, AGENT FOR ONTARIO AT LIVERPOOL, ENGLAND.

Liverpool, Dec. 1st, 1899.

Sir:

I visited Manchester a few days ago to make inquiry about your consignment of fruit. I learned from Mr. Potter that though the grapes had been seriously delayed in transit they arrived in very good order, with the exception of a small percentage which were somewhat damaged. Some of these I saw in Mr. Potter's office, which had been taken out of store that day. They were wet and to some extent affected with mould. Mr. Potter gave me some particulars of what he had done to effect a satisfactory sale and referred to the trade prejudices and other drawbacks he had met with. I learned that notices had appeared in the local papers drawing attention to the shipment, and a very good one appeared in the London “Mail” from its Manchester correspondent. I sent you a copy of this paper by last post. At the time of my visit all the grapes had been disposed of except fifty crates. The apples I understand turned out very well, except the “Snows,” which had suffered some damage. Regarding the grapes, it appears to me that if steps were taken to give the public better opportunities of seeing and tasting them, they could not fail to sell promptly and well on their merits. I looked into all the fruit stores in several leading streets in Manchester expecting to see samples of your grapes, but in vain. I saw nothing in the shop windows half so tempting as your neat little baskets of grapes would be at the comparatively reasonable prices at which they could be sold. It has occurred to me in thinking over the matter that in future shipments a special arrangements should be made with one or more leading retail shops in the large cities to expose the grapes for sale in their shop windows, at the same time guaranteeing the owners against loss for a season or two until the fruit had won its way into public favor. In this way I am convinced that the prejudices of the fruit dealers would be

effectually overcome and a successful and permanent trade be eventually established on regular lines.

The shops selected should be of the best class with good show windows and situated in leading thoroughfares. This class of stores have at present hanging in their windows bunches of English hot-house grapes and foreign varieties at prices varying from 16 cents to 80 cents per pound. Your baskets would look cheap at say one shilling and six-pence, and I believe would go like hot cakes if they only got a fair chance to be seen and tasted by the public.

EXTRACT FROM H. M. GIBSON'S LETTER OF DECEMBER 2ND, AGENT MANCHESTER LINER AT MANCHESTER.

You will be glad to hear that Mr. Potter has been successful in disposing of all the grapes and apples sent to him per Manchester Trader. He had some trouble in getting the grapes off, but was energetic enough to see that they were placed amongst the coster carts and various small shops. With regular shipments I am convinced this trade will be most successful, and that the grapes will take well here.

STORAGE OF APPLES IN WINTER.

IT IS a very stale but oft repeated advice, to spread out winter apples and pears on shelves in the cellar, and the decayed ones to be removed from time to time. We must wholly disagree with such a course, for when exposed, the apple rapidly loses its moisture and becomes shrivelled, which also causes deterioration of quality.

On this account apples and pears in cool storage should be kept tightly closed, and they will open up plump and fresh.

The great secret for keeping apples and pears is a cool temperature, and 35° to 40° F. will be found most satisfactory. Usually

apples are left to hang too long on the trees and become too much ripened; then they lie in piles or are stored in barrels in hot places, perhaps right out in the sunshine for weeks until the hot weather is over; then they are shut up in a warm, close, house cellar, with a temperature about 50°, and then the farmer wonders why his apples do not keep.

Let him try gathering them as soon as mature, pack them away at once in a cool place where the temperature does not rise above 40° and see whether the results are not much more satisfactory.

THE CANADIAN HORTICULTURAL ASSOCIATION met in Ottawa, Sept. 18-21. This is a trade organization, composed chiefly of professional florists, and therefore quite distinct from our own, which is composed chiefly of professional fruit growers and amateur florists, with a few professional florists and nurserymen.

Mr. James McKenna, of Montreal, is the new President elect, and A. H. Ewing, of Berlin, Secretary. It was decided to institute, if possible, a trade paper, to be called "The Canadian Gardeners' and Florists'

Exchange," and to be issued bi-weekly; size 10 x 12, and four pages.

Mr. McKenna is an ex-Alderman of Cote des Neiges, P. Q., and a partner of the firm of P. McKenna & Son.

THE TENTH ANNUAL CHRYSANTHEMUM show of the Toronto Gardeners' and Florists' Association was a grand success. It was held on the 15th to 18th. The quantity and quality of the exhibits were unprecedented, and the arrangements reflected great credit on the committee in charge.

GRADING AND INSPECTION OF APPLES, ETC.

AT the recent meeting of the Ontario Fruit Growers' Association held at Whitby, great indignation was stirred up among the fruit growers at the reports of fraudulent fruit-packing on the part of speculators who buy whole orchards and try by facing or by false grade marks or by using fictitious names, to secure for the poor fruit the prices of good fruit. An example of bad packing was placed on the table by Mr. T. H. P. Carpenter, of Winona, being samples of fruit from a barrel purchased by him, which was topped with large apples and filled in with ciders.

After considerable discussion, a general resolution was passed looking for inspection in order to prevent this crying evil for which the fruit growers are not responsible, but speculators who buy immense quantities and send out gangs of packers who are paid for their work at a contract price by the barrel.

A strong committee was appointed to deal with the whole question, and prepare details for a grading and inspection act for the consideration of the Dominion Minister of Agriculture. The following members of this committee met at the Lincoln House, Grimsby, on Friday, December 15th, 1899, viz., A. H. Pettit, E. D. Smith, Geo. E. Fisher, T. H. P. Carpenter, and the executive committee, viz., W. M. Orr, G. C. Caston and L. Woolverton. After careful consideration and much discussion, the following resolution was arrived at, which we believe will commend itself to our fruit growers generally:

Resolved, That both the Dominion and the Provincial Legislatures be asked to consider the advisability of legislation to carry out the following regulations for the sale of apples and pears,—

1. That all apples and pears packed for sale in closed packages shall have the minimum diameter of the fruit inside marked in plain figures on the top or face of the package, thus—2 inches, $2\frac{1}{4}$ inches, $2\frac{1}{2}$ inches, etc., as the case may be, and if more than ten per cent. run below the size specified, the package shall be considered fraudulently packed.

2. That all such packages shall also be stamped with certain grade marks which shall be defined as follows:

(a) X A No. 1. Sound apples or pears of uniformly large size and high color for the variety named, of normal form, at least 90 per cent. free from worm holes, scabs or other defects.

(b) A No. 1. Sound apples or pears of nearly uniform size and good color for the variety named, of normal form, at least 90 per cent. free from worm holes, scabs or other defects.

(c) No. 1. Sound apples or pears of fairly uniform size, at least 80 per cent. free from worm holes, scabs or other defects.

(d) No. 2. Apples or pears that are disqualified from being classed under any of the afore mentioned grades, but which are useful for culinary purposes, and not less than two inches in diameter.

3. That all apples or pears packed in closed packages be subject to inspection by the Government Inspector, and, in case of ten per cent. of the packages of any one grade being found fraudulently packed, the shipper be liable to a fine not exceeding 50 cents a barrel for all packages of that grade.

4. That provision be made for inspection not only at the ocean ports, but also at the request of the shippers, at local points of shipment in case of car lots.

5. That for local inspection a reasonable scale of charges be made of the shipper re-

questing it, gauged according to the number of carloads to be inspected.

6. That in such latter case, the inspector shall apply some distinctive inspection brand to show that the packages had been inspected and found honestly packed; but, if found

fraudulent, the inspector shall have power to forbid the shipment until properly packed and graded.

7. That in all cases the name of the packer and of the shipper shall be plainly stamped on the top of each package.

THE MOYER GRAPE.

I HAVE recently seen some rather flattering reference regarding the good quality of Moyer grape which prompts me to give my experience with it. When it was first introduced I invested, and soon found that it was a slow grower with short, brown, hard wooded joints, which indicated the desired hardness. I watched for three or four years for those great red bunches of grapes, as good as Delaware, but instead I found the blossoms weak and defective, and although surrounded by strong, vigorous neighbors blooming about the same time, the fruit clusters were never more than *nubbins*. I have thrown them out, and will fill their place with Worden and Geneva next spring.

The Brighton improves with age and good company. It produces regularly fair clusters of the very best quality. Early in the season be-

fore fully ripe they are quite pleasant to the taste, but when fully ripe they are easily the best grape on the list for this section.

The Winchel is also a good amateur's white grape, it is sure to give a fair crop of fine fruit very early in the season.

I had the Mills from the Association some years ago. Although a little late in ripening for this district I had this year some grand bunches of beautiful grapes which were much admired at our local fall show; the vine was trained against the south side of a building, and the clusters bagged so that the vine had some protection from the early frost. Moore's Diamond grows along side of Mills, and is so far a lamentable failure.

J. P. COCKBURN.

Gravenhurst, Muskoka.

REPORTS coming in recently of sales of our pears and peaches in Covent Garden Market are most encouraging. Duchess and Anjou pears are selling for \$2.00 per half bushel case, and even Kieffers have been bringing \$1.50. The Elberta peach is proving a grand export peach, as we anticipated it would be, bringing \$2.00 per half bushel case.

The following clipping from the Daily Mail, London, England, will be read with special interest:

"One of the latest wonders of the fruit trade is the departure that has been made by our colonial fruit producers.

"A few days ago a goodly parcel of Canadian peaches and pears was sold in Covent Garden Market by auction, with the most satisfactory results. The peaches were late Crawfords and Elbertas, and they were particularly good. But

the pears were exceptionally fine, and they made as high as 6s. 6d. per small case.

"As the result of this sale it is clear that the Californian fruit-growers will have to look to their laurels. Canadian pears, such as the prime Anjou (the variety which made the price quoted) are of finer quality than those sent from California. The fruit reaches us in better condition, is more aromatic and juicy, and is perfectly adapted for the English fruit trade.

"The shipment was sent out under the auspices of Professor Robertson, of Ottawa, who is specially responsible for the trial shipments which have lately been sent over in small fancy packages, and there is no doubt that in future seasons Canadian pears will secure the patronage of the best buyers in the trade.

"The representative of Professor Robertson, who is now in this country, informed us that they have now obtained the right temperature to keep the fruit in perfect condition while on board the fruit boats, so that nothing stands in the way of large and regular shipments of Canadian peaches and pears during the autumn months. Millions of both kinds of fruits are promised the trade for next year.

OUR HIGH GRADE FRUIT IN ENGLISH MARKETS.

Now that such earnest attempts are being made to place our very finest fruits in first-class condition on the English markets, it is encouraging to read such testimony as the subjoined, which was addressed to Prof. Robertson.

To Professor JAMES W. ROBERTSON, Commissioner of Agriculture, Ottawa, Canada:

SIR,—I duly received the sample cases of Canadian apples and pears, and a box of peaches which you sent me, and as your representative for the distribution of the fruit in this country informed me that you would be pleased to have my opinion on same, I herewith send you a report which is disinterested, and can therefore be depended upon with the utmost confidence. I am in a position to speak authoritatively upon this subject, as an expert from a market point of view, being the only fruit trade journalist who has, for just upon a quarter of a century, made choice fruit production, packing, and distribution a special study, that is, in the United Kingdom.

APPLES.

The apples were Snows, and when opened, the fruits were found to be in prime condition. Not one was unsound. They were wrapped separately in paper, and had been packed in layers and in rows. A better style for good fruit could not possibly be conceived. The fruits were medium in size. Possibly we want a larger sample on our markets, though the quality was excellent, and I was very much struck with them altogether. The package was rather small for apples. When the parcel came to hand, there was a large supply of ordinarily grown English apples on the market, and this would tend to affect prices. Still, for a large circle of buyers, the small package should form a good attraction. Large quantities of such fine eating apples, packed in these handy boxes, would secure a free sale directly their quality became known to the general public. I mean in the original package. I do not feel inclined to say absolutely that a bushel box would be better, but perhaps both sizes would prove advantageous to the trade generally.

PEARS.

Then as to the pears. They had been put up in the same size of box as the apples, and each fruit had been wrapped in a small square of paper. They were absolutely sound and in grand condition. I kept some of these pears for two weeks, and when fully ripe the flavor was delicious. They were *Beurre d'Anjou*. From these samples it is clear that Canadian exporters can easily put

high quality pears upon the English markets, and at the right time, too. I am satisfied that for quality, size, clearness of skin, and condition, that they will readily compare with the best Californian and French fruit. A better pear than these *Anjou* never entered the English markets, and I am confident that a big future lies before the Canadian pear trade in the United Kingdom. I was immensely pleased with these fruits and the prices realized, justifies the commendation I give them. With care in grading they would prove a very serious competitor to the French fruits, as the sample cases under notice were put up in better style, and the fruits were certainly cleaner skinned, and much more dainty as eaters, than the foreign ones referred to.

PEACHES.

Then as to the peaches. These were *Elberta*. The fruits had been partly covered with paper in which a strip of wadding had been included, so as to protect the fruits from bruising. Under this method, when the lid of the box was taken off, and the layer of wadding removed, the tops of the fruits would be exposed to the view of the buyers. Here the specimens were in fairly good condition, but not what could be termed perfect, the flesh of some being a little discoloured. All in the box I had were, however, eatable, of excellent size, and like the apples and pears, had been well and evenly graded, an important feature in the fruit trade here. The color was good, but the flesh was too fit, if I may expressively put it thus, that is, they needed to be sold in a day or two at least, not being in keeping condition. They were not so juicy as our forced peaches, but the flesh was firmer, and as an advocate of fruit-eating, I claim that these Canadian *Elberta* peaches are magnificent, and I should like to be able to live on them without anything else for a month. They are very delicious, possess a nutritious flesh, and should prove a great boon to the consumers in all of our cities and towns.

COMMENTS.

My report will be found most encouraging to those on your side who have taken a great interest in the development of the Canadian fruit industry, though the praise given to the packages and their contents is due to merit, and well-deserved. The Canadian fruit growers are to be congratulated upon having the fruit export trade, including packing, shipment and distribution, dealt with in such an admirable manner by the officials of the Department of Agriculture at Ottawa. It is my decided opinion that at present the Canadian fruit exports are better put up and more efficiently handled than those from any other colony shipping to the United Kingdom, including Tasmania.

SAMPSON MORGAN.



INDIVIDUAL FLOWER VASE.

THIS handy trifle has proved very useful to us in decorative work. We have it made in two sizes; the larger, shown in the illustration, is one-half inch in diameter and four inches in length, the smaller being three-eighths of an inch in width and three or four inches long. The rubber cap fits tightly and seals the vase effectively, no matter in what position it is placed when in use. In the centre of the cap is a small hole that will scarcely admit an ordinary pin without expanding, yet by a slight pressure any flower with a woody or stiff stem can be introduced, the rubber holding it in place. The vases are filled and the rubber caps fitted under the surface of the water, where they slip on very easily. The flower is then very readily pushed in, after which they are as one piece.

By the use of this vase the flowers were kept fresh from six to eight hours in a warm room. The vases do not show to any extent, the foliage of the roses covering them.

For dinner table arrangements, where the blossoms are sprayed on the cloth, the narrow, clear glass vases are easily hidden by the foliage of the flowers or accompany-

ing greens, and the fresh beauty of the decorations lasts throughout the entertainment.

For garnishing a bank of green or for use over doorways or arches in lofty rooms,



FIG. 1730. INDIVIDUAL FLOWER VASE.

where the heat causes flowers to wilt rapidly, the vases will be found to be invaluable, also in certain decorations of light greens, anywhere in fact where flowers are

used separately they add hours to their life and beauty.

The device will be found useful, as well, in mantel and basket work, as they are readily placed in soft soil and the moss of baskets. We find that a vase without a cap, holding four or five sprays of lily of the valley or other flowers adds considerably to a plant basket when it is inconvenient to disturb it to crowd in something with roots.

The spray of flowers on the handle also lasts much longer when the vases are used. A rubber cap with a larger opening readily admits and holds orchids, such as cattleyas, and other soft and thick-stemmed flowers. For a window display with curtains of asparagus or on tree stumps and branches, they hold and keep the flower better than it can be kept in any other way.—*American Florist*.

JAPANESE ZEBRA GRASS.



FIG. 1731. ZEBRA GRASS.

IN our garden the hardy ornamental grasses have always been favorites. But among our collection of these, comprising many sorts, there is no other one kind which gives better—we were about to say gives equal—satisfaction, to the Japanese Zebra Grass, *Eulalia japonica zebrina*.

The accompanying engraving affords a very good representation of the plant we are speaking of. Unlike all other variegated grasses, this one has its striping or marking across the leaf,

instead of longitudinally. It grows five or more feet in height, forming a most striking and graceful plant, resembling nothing else that we know of in cultivation. The expanded flower spikes resemble the ostrich plumes, and when dried, last for years.

This variegated Grass we find useful in many ways. In the mixed border amongst herbaceous plants it is a pleasing and striking object, and in a cut state for the decoration of large vases it is most valuable, as its graceful arching leaves gives a degree of brightness to floral arrangements not otherwise obtainable. The variegation, too, is clear and well defined, a circumstance which adds to its beauty. It is a great gain to be able to cut spikes of it four feet high for indoor decoration.

When first introduced from Japan it was believed that this plant would not prove hardy. Years of cultivation with it as far north as Buffalo proves it to be entirely so, and we are able to cut from it in the open borders up to the end of November.

Any soil not too rich suits it; in rather dry poor material we find that the variegation is more clear and defined. We have grown it in pots the year around, and find that it makes a capital plant for mixing with Ferns and other fine foliaged plants in the conservatory.

This very desirable plant may now be had of all dealers in hardy plants. It can also be raised from seed, packets of which can be bought for about twenty cents each.—*Popular Gardening*.

TUBEROSES EASILY GROWN.

IF to be grown in the open, start the bulbs in pots in March. Use small pots, one bulb in each, planting so the crown will be a little above the surface of the soil. Set in a warm place; keep the earth moist but not wet. When the bulbs show growth, give a cooler location, as rapid growth tends to weaken the plants.

Give fresh air freely, but do not allow any chills, as the tuberoses are very delicate and tender. Set the pots out of doors for a time on mild, sunny days. Never give more water than is necessary to keep the soil moist. If kept too wet there will be few if any blossoms. About the first of June transplant to a sunny spot in the garden, where there is a good soil which has been freely fertilized with well decayed cow manure. To secure fine blossoms the soil must be rich and mellow. When the flower stalks appear tie to a strong support with a narrow strip of soft cloth, for wind, rain and sometimes their own weight will cause them to break. Should the nights grow cool before they flower, cover with newspapers, which are light and a perfect protection.

If for house growth, set the bulbs in May, for succession of bloom, from April to June, at intervals of from two to three weeks. Fill six-inch pots with one part each of sand, leaf mould, old

cow manure and good garden soil. Treat as directed above, sheltering from the intense rays of the sun and keeping in mind the caution regarding watering too freely. The pots may be kept on a sheltered piazza if preferred. Water about once a week with liquid manure. Should the green aphid appear spray with soapsuds or a very weak solution of carbolic acid. The tuberoses are a charming plant, with flowers of waxy white and subtle, delicate, though heavy perfume.—*American Agriculturist*.

THE AURATUM, or the Gold Banded Lily of Japan, is one of the most magnificent lilies that is grown in the garden. It is hardy in dry soils but rots much more easily than other sorts in damp soils. The leaves are long and pointed, and the stems are very slender but strong and wiry. The flowers are very large, the petals being of the purest snowy whiteness, thickly spotted with chocolate crimson spots. It sheds a most delightful fragrance, which is a blending of vanilla, nutmeg and it would seem of all the sweet perfumes known. These bulbs are seldom ever sent out before November. From several bulbs I have had flowers for about one month, each stalk blooming at a different time.—*American Florist*.

ABUTILONS.

PENDANT flowers are always admired, as there is a charm about them; and the Abutilon is one of the most serviceable for window gardening. The erect, stately form of some kind, and the graceful flexibility of others, linked with clean and clear cut foliage renders them always charming.

Among the old sorts, for years my favorites, were the Thomsonii, with its orange flowers; Boule de Neige, white, and Lantana, crimson. A. Megapotamicum variegatum is so slender

and flexible, I always grew it with Boule de Neige in preference to any other support, and the result is charming, this being such a profuse bloomer.

The new sorts are so handsome and varied one scarcely is able to say which to choose. The Lavitzii is of dwarf habit; and of great value in the garden and house. Souvenir de Bonn, with its variegated leaves and orange flowers, should be in every collection.

Eclipse, a semi-drooping spotted leaf; and Erecta, a bright pink of outstanding flowers;

May Miller, a deep rose; Thomsonii plena, with golden spotted leaves; Lanata, deep red flowers; with Darwinii in bright orange, veined with red, make a fine collection and not expensive.

They have few superiors as balcony and garden plants; are continuously in bloom; and with the exception of the geranium there is no class of plants that has been more improved by cross fertilization. It requires much sunlight to grow to perfection the variegated sorts, and if this is not abundant, choose, by all means, the plain leaf. The running or trailing Megapotamicum variety, of bright red, yellow and brown centre, makes a nice border next a row of Darwinii, and then a line of Lantana, and, is possible, a centre of the golden spotted Thomsonii plena.

A bed of two or three dozen of these flowers, arranged tastily, is one of the handsomest found in a large and expensive garden; and from one plant each we can grow as many as we wish.

Some are slower in growth than others, therefore the Darwinii should come next the border. Cutting back is a blessing to them truly, so do not fail to trim well.

They harmonize finely with Crotons, Dracænas, Ferns, Palms and kindred plants, and well grown are a joy forever. A cool rather than warm location suits them best, yet not too cool.

Too much heat is inducive of red spider, and gives them a straggling appearance. Shower them upper and under frequently, and if done with regularity, the spider will not trouble them.

If pots are plunged in the ground, take the greatest care the roots do not come through the bottom of the pot. To avoid this set the pot on a flat stone, or cork them. Set in pots they are quite as thrifty and require less labor, and the growth is more compact.

In the country, never more than one or two of these modest and attractive flowers are usually seen in the house, but an assortment will give as much pleasure as a fine bed of pansies do in summer, and both prefer a somewhat sheltered place. At the closing day of my life, I find the love of flowers increasing instead of diminishing, and the need of a small conservatory more pressing since I have lost every treasure I possessed in this line by the blasts of winter.

M. AGATHA HOSKINS.

Newport, Vermont.

CAULIFLOWERS THAT WERE PROFITABLE.—A noticeable exhibit at the Hamilton Society's Flower Show on the 8th and 9th of November, was some immense heads of cauliflower sent in by Mr. H. H. Hurd, of Burlington. From 2¼ acres Mr. Hurd gathered 14 tons of cauliflowers, and the cash proceeds were \$600!

Our Book Table.

CATALOGUES.—Herb and Wulle, seed and bulb growers, Naples, Italy. General catalogue of seeds.

STRAWBERRY CATALOGUE and price list: Charles H. Snow, Cummings Bridge, Ont., for spring 1900. In addition to the standard varieties, Mr. Snow advertises a new berry called Snow's Perfection.

ORNAMENTAL SHRUBS for garden, lawn and park planting, with an account of the origin, capabilities and adaptation of the numerous species and varieties, native and foreign, and especially of the new and rare sorts suited to cultivation in the United States, by Lucius D. Davis; fully illustrated, published by G. P. Putnam's Sons, New York and London, 1899.

This book of 338 pages embellished with over 100 illustrations in one of the most comprehensive and valuable yet published on the subject of

shrubs. It is addressed to both scientific men and those who while lovers of plants have no knowledge of plants. It is handsomely bound and printed in large type on good paper. We are sure all garden lovers will be interested in it.

HOW TO PLAN THE HOME GROUNDS by S. Parsons, Jr., ex-superintendent of parks, New York city, with illustrations by W. E. Spader, published by Doubleday & McClure, New York, 1899.

THE author of that charming work "Landscape Gardening" has again given the public another valuable work on horticulture, less expensive, and if anything more practical than its predecessor. It sets forth the simple basic principles whereby the home grounds may be made beautiful. In the short space of 250 pages all the elements of landscape art seem to be treated of and dealt with by the hand of a master.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

COLD STORAGE.—A magazine devoted to Cold Storage, published monthly in New York, contains Prof. Robertson's details for construction of cold storage house in December number.

LIQUID AIR promises soon to be commercial product, purchasable by the gallon or by the barrel! A splendid plant for its manufacture has been built in New York City, with a capacity of about 800 gallons a day.

FLORISTS AND AGRICULTURAL SHOWS—We find the professional florist slow to exhibit at our amateur shows. If there is a long list of money prizes he will come to carry them away, but as for showing with a view of educating the public in the culture and growth of flowers for itself he is not in favor of it. Now we think he is making a serious mistake, for the more interest the ordinary housekeeper takes in window plants the greater the demand for the products

of the professional. Sanders, addressing the Chicago Florist's Club, said:

If my assertion is correct, that shows are an educator of the masses to love flowers, they should be encouraged in every way by those making a living from the sale of all agricultural products, which you see takes in all kinds, from state and county fairs, exhibits at horticultural and florists' societies' monthly meetings, up to the grand yearly fall show of flowers. Suppose for a moment, in your estimation, a good many of the exhibits are rather tame affairs. Do your share to improve them. Surely none will dispute, if a flower show, in whatever form, encourages a taste for flowers, and causes more to be used, the grower can have no kick coming. Has it not been a fact at every one of our fall shows, prices for all good stock rise during that week, however dull the trade has been before. This being so we opine the wholesale man is equally benefited, as he gets bigger commission by the booming of his trade.

THE SAN JOSE SCALE was the chief subject up for discussion at a meeting of the Niagara Peninsula Fruit Growers at St. Catharines on the 15th of December. A previous meeting had met and adjourned without reaching any

agreement regarding the methods of routing the pest. A large number of prominent growers were present on the occasion, some of whom were bitterly opposed to the act recently passed for the destruction of the insect. After considerable discussion of a report by a committee, a resolution, modeled after that passed at our Whitby meeting, was considered and passed after a warm debate. The resolution approves of the efforts of the department to stamp out the pest; asks for a continuance of inspection; the destruction of all badly infested trees; and in case of trees being slightly infested that the owner have a choice between their destruction or having them treated under the direction of

an inspector on condition of bearing a share of the expense of such treatment; that all nursery stock be fumigated previous to sale, under the eye of an inspector. One clause was added that was not included in the Whitby resolution, viz., that the owner have a voice in estimating the value of his trees destroyed. This latter provision would surely cause endless disputes and litigation. We think it far wiser that a reasonable basis be established, and then let the application to each individual case be settled by the inspector. Badly infested trees are of no real value anyway, and the privilege of treating trees slightly infested is surely a provision that should satisfy everyone.

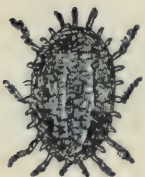
THE TEMPERATURE FOR HOUSE PLANTS.

On cold nights when there is a liability that the temperature will fall below the danger point, it is well to spread newspapers in the window and draw shades so as to prevent as much as possible the loss of heat. The plants themselves should be covered with papers, or if possible should be removed from close proximity to the windows. If placed in the centre of the room, preferably upon tables, or at least well above the floor, they will often escape injury, while similar plants remaining in the window would be frosted and perhaps killed by cold.

As a rule, plants do best at a temperature 10 or 15 degrees colder than they need during the day, and most of the species commonly used as house plants do no need over 50 or 60 degrees at night and will not suffer if the temper-

ature falls as low as 40 degrees, although if such a low temperature be continued for several days it will check the growing of most plants. In case plants have been frozen they should be slowly thawed out. While it will perhaps be impossible to save the foliage of tender tropical plants, the plants themselves, as well as the foliage of the hardier ones, can often be saved. They should be removed from the direct rays of the sun and kept at a temperature of 35 to 40 degrees until they have thawed, when it may be gradually raised. Cold water can also be used to advantage in thawing them out, but the temperature should be kept as low as 35 degrees as long as frost remains in the plant. Water used at 50 to 60 degrees will generally do more harm than to allow the plants to thaw out themselves.

—*American Agriculturist.*



THE MEALY BUG.—What is known as the Mealy bug is a flat, tender, yellowish insect, of the form shown in the engraving, and is covered with a white mealy substance, from which the common name is derived. It is especially

troublesome to Coleus, and many soft-wooded plants. With a little care it is not difficult to eradicate. Remove and destroy all that may be found, then syringe the plant two or three times a week with soapsuds to which has been added a little kerosene, say two tablespoonfuls to a gallon of suds.

Our Affiliated Societies.

HAMILTON.—The Hamilton Horticultural Society held its fall exhibition on Wednesday and Thursday, November 8th and 9th, in the new hall, over Oak Hall clothing store. The display made by amateurs was much better than in 1898, and will probably result in a still greater increase in this class of exhibitors at future shows as the members are learning what they have to compete against and many who have hesitated about bringing out really good specimens will not be deterred by the fear of being totally eclipsed.

Mr. Goodall, gardener, Asylum for Insane, and Mr. W. Hunt, gardener for Mrs. John Stuart, Inglewood, made very fine displays of auracarias, palms and other decorative plants "not for competition." The Asylum exhibit of chrysanthemum bloom was especially prominent in the cut flower department. Commercial florists were less numerous than in the preceeding autumn, E. G. Brown and Walter Holt being the only exhibitors. Mr. Holt erected a large and beautiful bank of flowering and decorative plants in the centre of the hall. In addition to cut blooms the Messrs. Brown exhibited several flowering specimens of the lately advertised chenille plant, *Acalypha Sanderii*.

Mr. Ogilvie's display of cosmos, sweet peas, gaillardias and other open air annuals would have surprised some of the horticultural journalists across the border who write at long range about the coldness of the Canadian climate.

Mr. Hurd's cauliflowers, averaging about 12 pounds each, were part of a crop of 14½ tons taken off two acres of land.

Mr. W. Hunt, who filled the somewhat trying position of judge, made the following awards:

AMATEURS—HOUSE PLANTS.

- Three plants in flower—R. Grice.
- Specimen plant, any kind—1st, Miss Steele; 2nd, H. Bradt; 3rd, Mrs. W. T. Elliott.
- Two Begonias—1st, Mrs. Caffery; 2nd, H. A. Eager.

AMATEUR—GREENHOUSE PLANTS.

- Four plants in flower—A. Alexander.
- Three palms—J. O. McCullough.
- Six Chrysanthemums, various and named—A. Alexander.
- Display of cut bloom—J. O. McCullough.

PROFESSIONALS.

- Ten Chrysanthemums, various and named—1st, S. Aylett; 2nd, W. Holt.
- Ten Chrysanthemums, single stemmed—S. Aylett.
- Twelve Cut Chrysanthemums, six varieties—1st, E. G. Brown; 2nd, S. Aylett.

Carnation Bloom—1st, E. G. Brown; 2nd, W. Holt.

New or Rare Plants in Flower—E. G. Brown.

FRUIT.

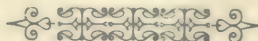
Collection of Grapes grown in open air—1st, J. Gardiner; 2nd, Rev. A. McLaren.

Collection of Apples—W. Wilson.

Collection of Pears—1st, Rev. A. McLaren; 2nd, W. Wilson.

Collection of Cauliflowers—W. Hurd.

LONDON.—The *Advertiser* gives the following notice of a new Horticultural Society that has just been formed in that city: It seems an anomaly that a city so distinguished as London is for the beauty of its tree-lined streets and the lawns and gardens of its residents should be destitute of any organization for the encouragement of flower cultivation. It is satisfactory to know that this condition of things is about to be remedied by the formation of an horticultural society in affiliation with the Fruit-Growers Association of Ontario, and in accordance with the act of the legislature of 1895, authorizing the formation of such societies, and prescribing the regulations by which they are to be governed. At a recent meeting of the Entomological Society the subject was brought forward by Mr. Beall, a delegate sent for the purpose, and a small committee was formed to canvas for members and to arrange for organization if successful. It consisted of Mr. J. A. Balkwill, Rev. Dr. Bethune, Mr. J. H. Bowman and Mr. W. E. Saunders. The act requires that their should be at least fifty members, subscribing \$1 each, and the names had to be obtained by Thursday, 21st, and sent in to the Department of Agriculture. With the assistance of Mr. J. Paine, the committee were entirely successful, and had procured no less than 73 names by that afternoon, and others have been obtained since. By the terms of the act the first meeting for the election of officers and the organization of the society must be held at 7.30 p m. on Wednesday, Jan. 10. The lecture-room in the Y. M. C. A. building has been secured, and it is hoped that there will be a large attendance. Each member receives the illustrated monthly magazine, the Canadian Horticulturist, and a share in the semi-annual distributions of bulbs and plants. It is proposed to hold a series of flower shows during the summer, and occasional public meetings, at which addresses will be given on suitable subjects. Anyone wishing to join should apply to any of the above-named gentlemen, who will gladly give all necessary information.



QUESTION DRAWER.

Grafting Grape Vines.

SIR,—I have an old and very vigorous Isabella grape vine which, owing to the shortness of our seasons, rarely ripens its fruit.

Can another and earlier variety of grape be grafted into the vine? If so, kindly explain how this can best be done.

GEO. THOMSON.

Wolfville, N. S.

The Isabella is an old variety which ripens late, and even in the Niagara district is often caught with frost before it is ripe. If our correspondent would graft his vines with Worden for black, Lady for white and Lindley for red he would get better matured fruit. We quote from a previous number of our journal giving instructions on grafting the grape.

Grafting grape vines is quite essential in vineyards where old or worthless varieties have by accident been raised. In a very short time the worthless vines can be made to produce an abundance of superior grapes. Grafting yields many other results that must be considered by every owner of vines. In testing new varieties of grapes the easiest and quickest way to do it is to graft them on the old vines. The new scions can be made to fruit the first year, and by the second year a good crop can be obtained. Many varieties that cannot be produced very readily from cuttings, will grow rapidly and successfully when grafted on to old vines. When properly performed the grafter's art can be made to increase the fruitfulness of the vines. Finally, and not the least important of all the benefits derived from grafting, this has been found to be the only successful way of fighting the phylloxera in California.

The method of grafting grape vines should be about the same in all localities, but the time of year best suited for the work naturally differ. Usually the spring of the year, from the first of April to the first of May, is the most suitable period for this work. The sap of the vines

should be in rapid motion at the grafting so that the union will be made at once. The best wood of last season's growth should be selected for the scions. The cuttings should be selected early in the season, and then be buried in bundles until needed for grafting. Frost will injure them, and they should be perfectly free from all exposure to it. The scions should be about the size of a lead pencil, short-jointed, firm and of well-ripened wood.

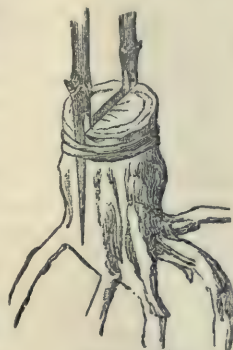


FIG. 1732
GRAFTED VINE.

The grafting is usually done at or near the surface where the vigor of the old vines is the greatest. Cut the stock off square at about one inch and a half above the joint, or half way between two joints. If the stock is a large one make a slight split in it with the knife or chisel, press a wedge down to pry it open, and then insert a scion on each side. The scions must also be cut to a sloping point just below an eye. Push the scions down firmly, but be sure to make the bark of the scion and stock meet. When the wedge is withdrawn the bark of the two should meet firmly together, and if they do not the grafting is not a success.

If the grafting is properly done, and the union made perfect, no bandaging is necessary. This is only an excuse to cover up poor workmanship. Some light earth should be pressed firmly into the split, and all around where there is any opening. This dry earth will prevent the graft from drying out. If there is any doubt about the work, a bandage of cloth and dirt after the old style can be wound around the graft. To make graftings more successful, it is well to cultivate the stocks carefully before so that a vigorous growth will be had at the time of grafting. The scions should also be strong, well-selected

twigs, taken only from good stock that will produce a thrifty growth.

Pear Trees Not Bearing Fruit.

SIR,—I have two pear trees, a Sheldon and a Beurre Hardy, which are in a thriving condition only the fruit does not come to perfection. It comes to about quarter size and then stops growth. I have other trees beside them which do all right. I have been advised to take away the earth about the trunk and put in about two bushels of hard wood ashes.

JAS. WEIR, 243 Emerald St., Hamilton.

A definite answer cannot be given without seeing the trees. Generally speaking small sized and knotted fruit grows on trees that are somewhat stunted in growth, and any treatment that would tend to restore vigor should correct the evil. We would advise a severe cutting back, a thorough cultivation of the soil five or six feet every way from the trunks and digging in it good rotten stable manure. Fresh hard-wood ashes applied in contact with the trunk would be injurious; if applied, it should be sown over the surface of the ground.

Latania (Palm) Failing.

SIR,—I have a palm that I prize very highly, and very much fear I am going to lose. The leaves seem to dry and wither. I found a few earth worms in the soil. It is a Latania Borbonica, about eight years old. Any directions for its restoration to health will be thankfully received.

G. PARKER, Stirling.

From the particulars given of the condition of the Palm, Latania Borbonica, referred to in the above question, I should suppose that imperfect drainage or sour soil is probably the cause of the trouble, as either coal gas or excessive dryness of the roots, unless of a very severe nature, would not cause the whole of the leaves to dry and wither as described. The fact of wire worms being found in the soil also indicates imperfect drainage, and consequently there is no root action to sustain growth.

I would advise repotting the plant at once into a pot one, or perhaps two sizes smaller than the plant is in at present, the size of the pot must depend on the amount of healthy roots the plant has; before repotting shake all the old soil

away from the roots, and cut away dead or any badly withered foliage, as well as all rotten or decayed roots, and repot into a compost made up of two parts of well rotted loamy sod, well mixed with one part of clean rinse sand, or better still, lake sand, and one part of well rotted leaf soil; use plenty of drainage at the bottom of the pot, pieces of broken flower pots being best for that purpose, over this put some pieces of coarse fibry around the roots; when potting press the soil firmly around the roots and give sufficient water to well moisten all the soil in the pot. Water must be given sparingly afterwards, until root action has well commenced, and only give water then when the soil appears dry on the top; when water is given, give sufficient water to well moisten all the soil, but don't keep the soil saturated all the time, as over watering is quite as injurious as insufficient watering, especially when there is very little root action to absorb the excess of moisture.

WM. HUNT, Hamilton.

Brugmansia Arborea.

SIR,—Will you kindly tell me how to grow Brugmansia arborea? I received a fine plant from Steele, Briggs Co. last spring, but since then it done no good. It puts out new leaves but they turn yellow and drop off, and the stock does not seem to grow. It is in good rich soil now.

P. S. HUSBAND, Oakville.

Brugmansia arborea belongs to the shrubby class of Brugmansias or Daturas; they are easily propagated from the young growth in spring or early summer. Cuttings of young growth with a small thin piece of the old wood attached to the base of the cutting (called a heel), are best if obtainable, these root readily if inserted about two inches deep in sand, three or four cuttings in a four inch pot, and kept in a window or hot bed, in a temperature of about 65°, keeping them shaded from hot sun for a few days. When rooted they can be potted singly into four inch pots in loamy soil with a good mixture of sand and leaf soil added; they will require liberal treatment during the summer, repotting them into pots fully two sizes larger each time, a good rich loamy soil, without sand or leaf soil, will suit them at this stage. When the plants

have attained a height necessary to form a plant of the height required, say two feet, the top can be pinched out which causes the plant to branch out and form a shapely plant. Plenty of water and a little liquid manure while growing in summer will help the plants considerably. Water can be gradually withheld in the autumn when the leaves show signs of decay, when the plants can be placed in a cool dry place, in a temperature of about 45° ; very little, if any, water being required during the winter. In the spring the plants can be taken out, and some old earth taken from among the roots, repotted into the same, or perhaps a larger sized pot, as these plants require plenty of root room, a twelve inch pot or a small tub being none too large for a good healthy specimen; after repotting, water well once, introduce the plant into a higher temperature, and when established give plenty of water as before recommended. The plants will benefit if the young growth is pruned back in the fall, when the plants are dormant, to within a few buds of the older growth.

WM. HUNT, Hamilton.

Glen's Arborine.

SIR,—In the interests of fruit growers about here, I want to know whether Glen's Arborine is better than a mixture of soft soap and washing soda to prevent the round headed borer entering the trunk of trees? Also will it prevent sun scald, a trouble very common here? A great many agents are about selling this article.

W. J. WILSON, Castleton, Ont.

Glen's "Arborine" has never come under our notice. As I am not aware of its composition, it is impossible to give an opinion as to its relative efficacy compared with the mixture of soft soap and washing soda you refer to. If you can send me any particulars respecting this material, it might be possible to give you information on this subject. I might add that the substance sold under such and similar trade names can scarcely be more effective than the mixtures made from the authorized formulæ, and are frequently if not always to be found more expensive.

FRANK K. SHUTT.

Chemist, Experimental Farms, Ottawa.

Nut Grass.

SIR,—Please inform me the best way to get rid of nut grass, and oblige

A. E. PARK, Cornwall.

Nut Grass (*Cyperus Esculentus*.)

In the common name of this plant we have a misnomer which is somewhat misleading and confusing. It would lead us to infer that this plant was a grass whereas, as can be seen from the botanical name, it really is a sedge. Its genuine name *Cyperus*, has some reference to Venus, the goddess of love. This form is not identical with the "Nut Grass" of the Southern



Nut-grass. showing the tubers.

FIG. 1733.

States, *Cyperus rotundus*, which is widely distributed throughout Europe and has been introduced to the various parts probably through ballast. Nut grass is usually found in low wet areas, and upon underdraining these lands, for the purpose of bringing them under cultivation, great difficulty is frequently experienced in eradicating it. Propagation is effected chiefly by means of underground stems, which bear numerous tubers about half-inch in length. These send up stems to the surface.

Any mode of eradication which will prove effective in the case of Canada thistle or twitch grass will prove valuable in getting rid of this pest. The underground tubers must be starved out. If so desired hoed crops might be grown, but in such cases the cultivation should be so thorough as not to allow any of the plants to show above the surface.



FIG. 1734. NUT GRASS.

The following treatment is recommended: Apply a heavy coating of manure and drill in rape. Cultivate the rape thoroughly. Rib the land up in the fall as the exposure to the frost will greatly assist in riddling a field of this pest. The rape makes excellent pasture and will assist in smothering the nut grass. Hogs are fond of the tubers. PROF. DOHERTY, O.A.C., Guelph.

Crab Claw Cactus.

Please give the botanical name of the Crab Cactus or Lobster Cactus, and also the name of the Cactus on which it should be grafted for best success.
H. C. NORWICH.

The botanical name of Crab's Claw Cactus is *Epiphyllum*, and the principal variety is *Epiphyllum truncatum*. They are easily grafted on stems of *Cereus Columbrinus* about two feet high. *Periskia* stock is also used with great success. Either stock may be purchased at about 20 cents each.

Cuttings for Top Grafting.

SIR,—I have bought a few Wealthy apple trees to arrive in spring. I shall cut them back before planting and I want to know if I can use the cuttings to top graft other trees. I will also plant strawberries, raspberries, black and red currants and gooseberries, all for market. What would you advise me to plant?

Yes, the scions cut from the mature portions of last summer's growth will be excellent for top grafting other trees. As to varieties of strawberries, there are so many new ones every year it is difficult to advise. The writer thinks very highly of Clyde, Woolverton, Saunders and Haverland. Of raspberries, we plant at Maplehurst only Cuthbert and Marlboro for market; of black currants, Lee's Prolific, and Saunders; of red currants, Cherry and Fay. For a full description of these fruits see *Fruits of Ontario for 1898*.

Cherries.

SIR,—I would be obliged for a list of cherries for profit. I want to plant about 175 and have now 50 Richmond and Montmorency. My soil is clay loam, well drained, and situation favorable for early ripening.
A. H. WANE, Beamsville.

In a section where the sweet cherries grow it is well to plant with a view to covering the season with a few choice varieties. A good list for this purpose would be Early Purple, Governor Wood, Cleveland, Elton, Black Tartarian, Knight's Early Black, Napoleon Bigarreau, Mezel, Elkhorn and Windsor. These are named in order of ripening. Of the sour cherries a good list is May Duke, Richmond, Olivet, Hortense, Montmorency and English Morello.

Open Letters.

A New and Valuable Forage Plant.

SIR,—There is another most marvellous forage, dry feed and fertilizing plant which is grown largely in the south, of which I have never seen mention in your valuable paper, and which I believe is well adapted to the central and northern parts as well as to the south. After the Florida velvet bean and the cow pea in the south, this is next in general value as an all-round green or dry feed and fertilizer. I refer to what is known as the "Beggar Weed," the botanical name of which is "Desmodium."

From its name you must not infer that it is a noxious weed, but on the contrary there is nothing grown in the nature of grass or forage of any kind that is eaten in its green or dry state by all stock on the farm with more relish and greediness than this.

The seed in appearance resembles that of clover, and is about the same in size, and it will require for seeding purposes ten to twelve pounds to the acre. To grow a crop successfully, first fit your ground nicely early in spring, harrowing down well before sowing, so that seed may be scattered evenly, thus getting a good even stand on the ground, after which sow your seed broadcast, then harrow again, covering well. If your seed takes nicely, your field will soon take on a beautiful green, as it is an exceedingly rapid grower. Or, another way, you can sow seed in with your oat crop and harrow, or may sow broadcast in corn and cover at last plowing. The latter plan will do as well if wanted for pasture, but if to be cut up for dry feed the other plan is better.

If you want to use your growing crop for pasture, I would not turn on until growth is nearly waist high and after heading process sets in, as at that stage the lateral stems are well developed with leaves and seed formation. If you wish to cut the crop to cure as a dry feed, I would cut it a little before it reaches the stage above described, as by so doing you can, in five or six weeks time, cut another crop from the same ground from new growth offshoots from the original plants, as usually after the second crop is cut a sufficient growth is made to afford you an excellent fall pasture.

To cut this crop you can use a scythe or mower as you like, as in its new and tender state it cuts as easily as timothy or other grass. To cure it, treat it the same as other hay. Should you wish to use the crop to enrich the land, you can turn the second growth under for fertilizer, which may be done in fall or spring as you like. If you want to secure a seed crop, cut growth first time when about thirty inches high, at which stage it makes an excellent dry feed, after which do not disturb it again until it has attained its full growth of from five to eight feet, and matured its seed. If your crop is a good one, it will stand so thick on the ground that you can scarcely walk through it and will reach away above your head.

After the ripened seed is secured in the fall, the dry leaves by this time having fallen off may be

turned under, together with dry stalks, all of which will make you a most valuable fertilizer.

In the south a fair crop may be secured the second and often the third year with re-seeding, but this plan I would not advise in the colder sections, for fear of winter kill.

While this plant is a grand success in Florida and the other Southern states, I do not regard it at all as tropical, and believe it will thrive and do well where other forage crops will grow. It being such a wonderful success in the South, and so valuable for all purposes, I think that farmers everywhere will make no mistake by giving it a trial.

If further information is wanted by your readers if they will enclose stamp I will cheerfully reply.

CAPT. E. A. WILSON.

Fraudulent Packing.

In my letter, which you published last month, there is one expression the printer made which sounds quite unconnected, "of course a brand is a brand by law" was written "of course a barrel is a barrel by law." The letter was not intended for the press, but as you have used it perhaps you will give me not only space to correct the error but also to give the cause of its being written, viz:

I bought a barrel of apples; the barrel was labeled "Snows." When opened they showed poor sample of Ribston Pippins. After about two gallons were removed they turned into Holland Pippins, and a very bad sample at that. There was not a really sound apple in the barrel, and to add to the trouble they were re-packed apples sold by the Fruit Auction Company of this city. We have no trouble about coal oil, why should we have about fruit?

G. H. FAWCETT.

Fraudulent Packing.

SIR,—I enclose you some newspaper cuttings about apple packing. In addition to old boots and kindling wood we have found turnips and pumpkins. Now, how to put a stop to this is the thing to get at. We are of opinion that it can only be done by having every barrel so marked that it can be traced to the place and to the man who packed it, and make him liable for the damage. This could be done by securely tacking a card on the end of the barrel giving the full address of the grower, number of lot, township and county, also the name of the packer if packed by any other than the grower. This same rule could be applied to packages in baskets, such as plants, berries, etc., by tying the label to the package. We think fruit growers and dealers in fruit should urge on the government the desirability of passing a law to in some way meet these cases.

We should be pleased to see the rules of the Ontario Fruit Growers Association for grading fruit.

DR. A. BOWLBY, Waterford.

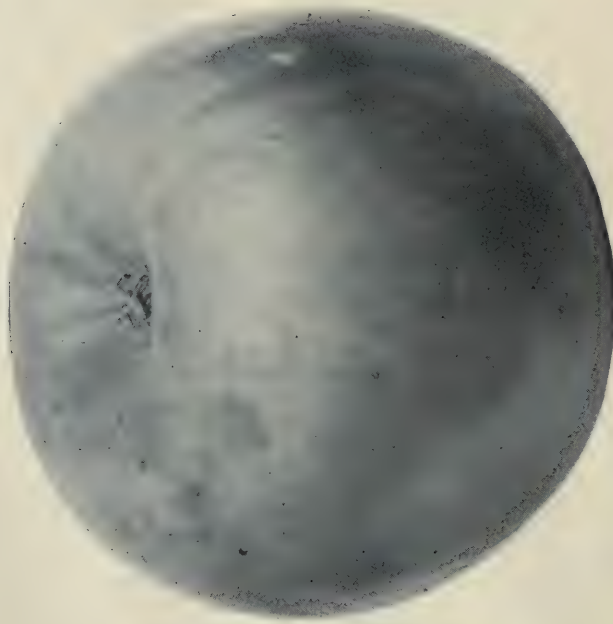


FIG. 1735.

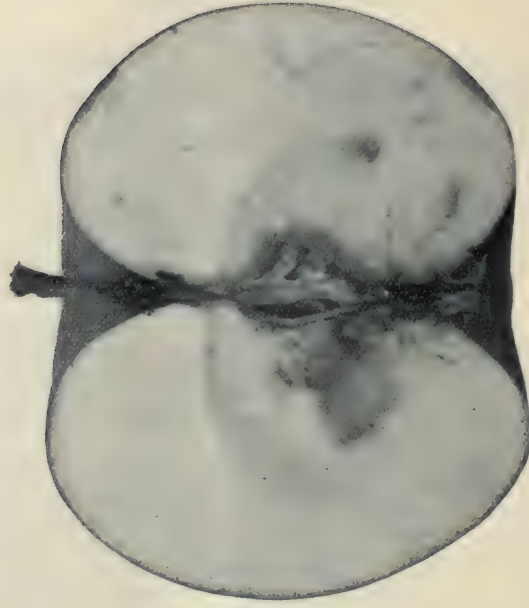


FIG. 1736.

THE LOUISE. *Golden*

Photo by Miss Brodie.

THE CANADIAN HORTICULTURIST

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** FEBRUARY **

APPLES OF CANADIAN ORIGIN.

WHEN we speak of apples of Canadian origin we touch upon a field of study most inviting to the pomologist and of work heavy with possibilities for the hybridist.

It is now well proven that the fruits of one continent, though of the most exceptional merit, are by no means those best adapted for out of door cultivation in another. The grapes of the Continent of Europe, though of fine size and quality, do not ripen well in Canada, and in our climate are sadly subject to mildew; the apples of Russia, from which so much was expected, are unsuited to our country with a few exceptions, and of the apples of England only a half dozen or so are counted valuable here. Even the old Ribston, so highly valued in England, lacks vigor in Canada and will soon be omitted from desirable varieties in Canadian catalogues.

But we are fortunate in having some varieties of apples, as well as other fruits, which have originated on Canadian soil and which show the possibilities before us. Among these we may mention the Ontario,

which originated at Paris, Ontario, and bids fair to be placed among the best export varieties; the Crimson Pippin, which originated near Prescott, and though the orchard of this variety, planted by the originator, Mr. Harold Jones, is almost the only case in which it has been tested, the result is certainly highly in its favor as a dessert apple for any market; the McIntosh Red and the Princess Louise.

McINTOSH, as we may call it for brevity's sake, has been prominently before us for some years. The wonderful beauty and fine quality of this apple at once gave this variety a claim to the front rank as a dessert apple. Its season is about the same as the Fameuse, it is larger and more showy, and on account of its thick skin an excellent shipper. Surely, thought everyone in 1892, this is the dessert apple above all others for us to grow in Canada. Mr. R. A. Shepherd, of Montreal, wrote us that year that the McIntosh Red was the most beautiful as well as the most delicious apple he had seen offered for sale that season. He had tried it eight years and believed it could be grown as suc-



FIG. 1737. MCINTOSH.

cessfully at Montreal as the Fameuse, and perhaps more successfully, and therefore he recommended its cultivation in the province of Quebec. The same year Mr. George Bunbury, of Oakville, wrote us: "If we can grow such lovely apples as the McIntosh Red shown at Hamilton I think we ought to do so, as I believe such apples will always fetch fancy prices in England, and I don't think I ever saw such a perfect looking red apple as the McIntosh Red."

But we must be fair and add that this fine variety has the serious fault of being subject to apple scab, which renders constant spraying necessary and much increases the cost of raising fine samples. Mr. John Craig, in 1893, also reported that while the wood was hardy he found it somewhat tender at Ottawa.

The PRINCESS LOUISE has

been before the public since 1879, when it was first shown before the Ontario Fruit Growers' Association by the writer as the Woolverton, but afterwards named Princess Louise after H. R. H. the Marchioness of Lorne, on account of its great beauty. The original tree still stands on the "Mountain" side at Maplehurst, Grimsby, and singularly enough the fruit borne by the original seedling tree has not been equalled in beauty by the fruit borne on trees propagated from it, although of the same very excellent flavor.

In September number, 1888, we gave a very good colored plate of this apple, and now we give as a frontispiece an

excellent photograph, taken in 1899 by our special artist, Miss Brodie. We also give a technical description of the apple, which may be of service in identification, as we find that in some nurserymen's collections



FIG. 1738. MCINTOSH.

THE CARE OF SHADE TREES.

it has been mixed with McIntosh Red and the varieties have been confused.

PRINCESS LOUISE.

An apple of great value for the home garden as a choice dessert variety, but probably not sufficiently productive to be profitable in the commercial orchard unless it should command a higher price than other apples on account of its excellence.

TREE, of slender habit, fairly vigorous, hardy, moderately productive.

FRUIT roundish, averaging $2\frac{3}{4}$ by $2\frac{1}{4}$ inches in length and breadth respectively; skin greenish yellow, of bright waxy lustre, with cheek of clear, bright carmine; stalk stout, $\frac{3}{4}$ of an inch long, in a narrow, moderately deep cavity; calyx half open, in a broad, shallow, slightly plaited basin.


FLESH, pure white, texture tender, fine, somewhat crisp, juicy with rich aromatic flavor.

SEASON, November to February.

QUALITY, dessert, best; cooking, good.

VALUE, home market, very good; foreign market, very good.

THE CARE OF SHADE TREES.

 ANY inquiries were made this year regarding the treatment of shade trees which were showing signs of lack of vitality. In some cases the cause of the unhealthy condition of the trees was plainly due to insects, in other cases to fungi, but most frequently the cause was due to purely physiological conditions, such as unfavorable conditions of the soil, or atmosphere.

The towns and cities of Ontario can point with pride to their beautiful avenues or trees which not only furnish a grateful shade from the sun's rays during the hot days of summer, and cause refreshing breezes to blow along the pavements, but also give shelter from the winds and storms of winter. The larger the town or city the more attractive these trees become by way of contrast with the long walls of naked brick and stone.

But the value of shade trees lies not solely in the shelter and shade they furnish, they conduce to the healthiness, and their value in this connection can scarcely be estimated.

That many of these valuable trees are dying, or are in an unhealthy condition due to physiological conditions, is a fact that requires attention on the part of their owners, and it is the purpose of this article to point out the remedies that may be applied to reinvigorate these trees, and the causes which bring about these undesirable conditions.

1. Trees, like animals, require food, and if the supply gives out they must inevitably starve. One of the chief causes for the unhealthy, dying condition of so many trees is this lack of food supply.

It is true that a tree makes use of the almost inexhaustible reservoir of carbonic acid gas in the atmosphere, and the water in the soil, but it should not be forgotten that a tree requires inorganic food which is absorbed by the roots. A farmer does not expect a crop from soil which contains no nourishment, but, somehow or other, many persons entertain the very erroneous idea that a tree ought to grow and thrive for years upon the food which happens to be in the soil in the immediate neighborhood of the roots.

Very frequently when a tree is planted the earth which has been thrown out in making the hole is thrown back again and packed about the roots. The amount of food in such a case will not suffice for any length of time. Sometimes the tree will live and thrive for several years; then it is because the soil has been richer than usual. Every year the ground for a yard or more should be spaded deeply, and a dressing of well-rotted manure or compost applied. In doing so a constant supply of food will be maintained, and the tree will grow and thrive.

2. A second cause for the disease of vitality in many shade trees is the lack of per-

fect circulation of air in the soil. The vital processes in the roots demand a supply of oxygen, and if this gas is excluded the roots die of asphyxia, or *root rot*. Oxygen is required, not only for growth, but also for the formation of reserve materials. A good florist knows how to provide for drainage in potted plants; he knows that a hard clay bottom is unsuitable. *Too much water* and *soil of too close a texture* will prevent the circulation among the roots and root-hairs, and a free interchange of the atmospheric and soil gases. The best foresters advocate drainage for every tree. Too often the water which is given the tree lodges in the hole made for the tree, so that the soil becomes saturated and aeration is prevented.

When trees are planted along the sides of cement pavements and paved streets as is the case in many of our towns and cities, they



FIG. 1739. MAPLE TREE AFFECTED WITH STAG HEAD.
(Suffering from Lack of Proper Drainage.)



FIG. 1740. MAPLE TREE SUFFERING FROM STAG HEAD
(Suffering from Lack of Proper Nourishment.)

suffer from an imperfect supply of air among the roots. The hard impervious pavement prevents not only a proper supply of oxygen, but also proper evaporation from the soil beneath.

A common form of disease arising from a diminution of the supplies of food and water is *Stag Head*, "when the top branches become leafless, dry off and remain as dry sticks, like antlers projecting above the foliage." The lower branches remain green, but make but little growth.

In the treatment of Stag Head the sod should be removed from a space two or three feet in radius of about the tree. This circular area should be frequently stirred by the spade and kept raked, as this process will tend to promote aeration; but unless provision has been made for proper drainage

when the tree is planted, aeration will be perceptibly checked whenever a prolonged wet period occurs. The young rootlets decay, the tree is weakened and becomes more liable to attacks of fungi, which prey upon the roots.

3. Another cause for the death of many trees is *Sun Scald*, which produces a wilting of the tissues by a too rapid evaporation from the leaves. The tender young shoots are very liable to injury from such a source, especially if they are subjected to a hot sun after a period of rapid growth in moist weather. The edges of the leaves turn reddish yellow, wilt and dry up.

4. A cause which produces practically the same results as Sun Scald is known as *Winter Blight*. The tissues wilt owing to too rapid evaporation during fine, warm days in winter, when the soil about the roots is frozen, or when dry, cold winds prevail.

It is very difficult to provide remedial treatment for Sun Scald and Winter Blight. Perhaps a liberal mulching with manure or straw would be as efficacious a remedy as any that could be devised.

5. Other causes occasionally produce

serious results, but only under peculiar circumstances. Sometimes the air of cities and towns becomes poisoned with harmful gases to such an extent that whole avenues of trees are seriously affected. There is of course no remedy available in such a case.

A few words may be said as to the treatment of old trees which are showing signs of lack of vitality. Growth may often be stimulated by assisting nature when the roots have become sluggish. The branches should be pruned so that the demand upon the roots may not be exceeded by the transpiration from the leaves. The turf, moreover, should be removed and the soil given a top dressing of compact earth before replacing the sods, so as to allow the nutrient salts to be washed down to the rootlets by the rain.

All decaying patches or holes should be mended by clearing off all rotten wood, and the place finally closed up with pitch or coal tar to prevent the entrance of fungi.

My second article will deal with the protection of shade trees from the attacks of insects and fungi.

O. A. C., Guelph. W. LOCHHEAD.

WARM AND COLD WATER FOR PLANTS.

SOME of the experiment stations have been trying the prolonged effect on plants of water at various temperatures, from freezing to 100 degrees. The tests have been made at the Wisconsin and Ohio stations during the last two years on a variety of plants, including geraniums, coleus, potatoes, beans, etc., and the conclusion is reached that between 45 and 75 degrees, the temperatures mostly available in practice, no apparent difference in effect is caused with any of the plants tested. Water at 32 to 34 degrees grew healthy, short-jointed geraniums, but sometimes affected the more sensitive Coleus unfavorably. At 100 degrees a weak and spindling growth was caused in almost every

instance. The practical point is that where the available water supply in a garden or greenhouse is of a temperature not much below 40 degrees, it will hardly pay to use artificial means to warm it. Cold water, indeed, seems to act as a tonic for many cultivated plants, and glasshouse growers are more and more coming to rely on forcible spraying with cold water to clear growing plants of insect pests. They find that the soil is not appreciably chilled by a reasonable amount of cold water. There are times, however, when the immersion of pot plants kept in a chilly room in warm water is very beneficial, as it renders the fertilizing matter in the soil more available. R. N. Y.



FINE NATIVE ELMS NEAR TORONTO.

LANDSCAPE GARDENING—II.

THE site being secured, the designer must become thoroughly familiar with the nature of the ground and character of the surroundings and the requirements of the client; then, if he has the genius to make his work an artistic success, he will be able to outline clearly in his mind a picture of the completed place, which is in harmony with the character of the ground and its surroundings. His conception will be as clear as that of the artist painter. With the artist it is one thing to conceive a picture and quite another to transfer it successfully to a canvas, and so it is with the landscape architect. There must be with the power of designing a very broad practical knowledge of methods and material available to reproduce this picture, and a

skill in making plans for, and in directing work, so that the proper methods may be used and the material so combined that the desired result will be secured. With all his skill the landscape architect must often wait for years to see his picture realized, while the artist may reproduce his in days.

The success of a place depends very much upon the cooperation of the building architect. By working together a result may be secured which would oftentimes be impossible, if they worked independently. Much depends upon a proper fitting of the house to the grounds—in character, outline and elevation—by the architect, and a proper arrangement of roads, walks, and vegetation with reference to the house, by the landscape architect. You might as well expect two

artists, one a painter of buildings and the other of landscapes, to paint pictures independently of each other on different canvases and then to trim them up and fit them together successfully. Not only should the character of the ground be considered in determining the character of the house, but also the character of the surroundings. I know of a modern cottage, constructed largely of rough boulders with dark-stained and irregular gables and projections, all covered with a growth of vines. It is standing on an avenue surrounded on all sides by stately mansions of cut stone, brick and wood. It reminds me of a countryman in his old clothes at a city ball. He would be a very pleasing and picturesque object on the farm among his cattle and his help—the controlling feature of the scene—but he would look out of place among dress suits, and so did this house among its neighbors.

The character of the place having been determined by the landscape architect, or with his assistance, or it may be by the owner (for the designs of many places have been made and carried out by the owners with most satisfactory results), the location of the house, arrangement of grounds, and construction is to be considered. In these matters it is useless to attempt to establish rules, for it is seldom that two places can be treated exactly alike, even if it were desirable that they should be, and there are no two families with the same requirements. General principles may be stated that can be adapted to varying circumstances. The house will be located with reference to views, exposure, the subdivision of the ground, surrounding buildings and approaches, and this can be properly determined only by a comprehensive study of all these points. A well drained location will be secured, care being taken to avoid a site over, or in the line of, springs. In a house to be occupied in winter a warm exposure for the living room is desirable, but if to be occupied only

in summer the cool side of the house should be the living side.

Convenient and comfortable approaches are more important than fine views from the windows. One soon tires of a fine view, if it is secured at the expense of a daily climb up a long hill or long flight of stairs. A fine view is to be sought for and is an invaluable possession, but it will be fully as much appreciated if reserved for occasional enjoyment from a comfortable outlook above the house site, if it is not practicable to secure it from the house and at the same time secure good approaches. In any event, the question of approach will largely govern the location of the house. Too often the landscape architect is only called in to solve the problem of how to get to the house after it is built, this important matter never having been considered up to that time, and then appearing impossible. Many times a very expensive or very awkward, and always unsatisfactory makeshift, is the only way out of the difficulty. The position of the house will depend upon the use the ground is to be put to, and care must be taken that it does not encroach upon areas required for other purposes. An example I have in mind is that of a village lot in the centre of which a house was placed. The proprietor wanted a lawn tennis court, and could have secured it at small expense if the house had been located a few feet to one side from where it was. He had to go without it, as other parts of the ground were required for other purposes.

The subdivisions of a small or medium sized lot, outside of the approaches and yards, would ordinarily be the lawn, a flat surface for tennis or other games, which may be a part of the lawn, the flower garden, and the vegetable garden, of which the flower garden may be a part. The lawn should be the broadest piece of unbroken surface on the place; its position and size would be governed by the shape of the lot,

the amount of land necessary for other purposes, the direction of the view, and the location of approaches. Ordinarily the tennis court would be located on flat land, or land that could be made so readily; on the lawn, or near it, if a grass court; if a dirt court, screened from it by planting. The flower garden should be readily accessible from the house, out of the line of an important view. Its location and character could, and probably would, be varied to suit local circumstances more than any other subdivision of the ground. The vegetable garden would naturally take up its quarters at the back of the buildings near the stable and sheds, and its relative importance will be governed by the desires and tastes of the owner. All

this applies to the village lot which is all to be used for home grounds, but the same principles would apply to the home grounds which should be reserved about the farm buildings or about the house of any large estate in the country. There should be a distinct division between this, the home ground, which would be nicely kept, and the cultivated, mowed or grazing fields of the farm. It may be a fence or wall bordered by shrubbery, to one side of which would come the lawn and on the other the farm, or it may be a retaining or ha-ha wall with the lawn sloping from the house to it, and with planting along its borders above the wall.

Boston, Mass.

W. H. MANNING.

(*To be Continued.*)

THE WINDOW GARDEN.

WASH THE PLANT'S FACE.—Just now, in the depths of the winter's gloom, a thrifty window garden is a comfort and joy, though the actual realization in bloom is not likely to be as profuse as later in February, when the greater power of the sun stimulates a rapid growth. But few additions have been made to the list of practicable window plants during late years, except in the more extended use of palms, ferns, rubber trees and decorative plants of this character. Geraniums and Begonias are universally the favorites, and are grown wherever the night temperature of the living rooms can be kept above freezing. The later geraniums are really magnificent improvements, bearing immense blooms of clear and pleasing colors, and are well adapted for window decoration. At this season the endeavor should be to give them all the sunlight possible; every hour counts in increasing vigor of leaf and flower. Keep them well watered.

The dry, hot air of living rooms absorbs the surplus moisture from a pot of growing plants very quickly, and there is less danger of overwatering than is generally appreciated, in case free drainage to the soil has been provided. The foliage, too, should be thoroughly sprayed or sprinkled often enough to keep the plant tolerably free from dust. Dirt and dust on the leaves clog up the breathing pores, and interfere with healthy growth. The window plant often needs a washing just as badly as a boy with a dirty face, and will show a deal more gratitude for it. Managers of amateur greenhouses, on the other hand, are likely to affect the opposite extreme and shower their plants into debility. The air of a small conservatory or glasshouse is easily rendered too damp for the best conditions of plant life during dull weather. Careful and loving observation of the growing plants will soon acquaint one with their peculiarities and desires.

R. N. Y.



FRUIT CULTURE—I.*

General Principles.

CLIMATE. LOCATION AND SITE—

One of the first things which determines the success or failure of any particular fruit is the climate question. With great extremes of heat and cold we yet have, through a large part of Ontario, a climate which favors the successful production of most of the fruits belonging to the temperate zone—and fruits of the highest quality. The annual temperature of the different sections of the country will naturally have much to do with the successful production of the different fruits. Occasionally a favorable winter may enable a fruit to be ripened outside its usual northern limit, but the minimum temperature of the average year will determine the question as to whether certain fruits can be profitably grown or not. Thus, where the mercury habitually touches 10° below zero, the successful culture of peaches is practically impossible; where the point ordinarily reached is from 15 to 20° below, the growing of the sweet cherry becomes a doubtful experiment, and so on with other fruits. In each species of fruit, however, there are varieties with exceptionally hardy characteristics, enabling

them to withstand conditions totally fatal to the rest of the species, and it is this fact that makes the choice of varieties an extremely important point for the planter to consider. Then, within a given district there may be locations so favorable as to enjoy immunity from the more severe frosts affecting the surrounding country. The low temperature of the water in the spring will retard the growth of vegetation, and thus enable the effects of spring frosts to be escaped. In the summer the temperature at night will usually be higher on the lands adjacent to a lake, and in the fall the warmer temperature of the water will lengthen the growing season, and less danger from the early autumn frosts exists. Experience has shown that the most favorable sites for orchards are on lands frequently sloping to bodies of water, and always a little elevated above the surrounding country. This is partly because of the influence of the water; partly from the drainage facilities; and partly because of what is known as atmospheric drainage. It is a fact familiar to most people that the colder air is, the heavier it is, and the low flat areas are usually, therefore, the first to

*This article was published in the last report of the Superintendent of Farmers' Institutes for Ontario, and we republish it for the benefit of readers of the "Horticulturist" by the courtesy of the Superintendent.

suffer from frosts. With regard to the aspect or exposure of orchards generally, this much may be said: Near large bodies of water the most favorable exposure is on the slope towards the water. In a district away from water a northern or northwesterly exposure is the best, as the blossoming period is retarded and danger from spring frosts escaped. The slope, however, must not be too pronounced, or too cold and backward. Account must also be taken of prevailing winds, and a few words may be advisable here as to the use of windbreaks.

WINDBREAKS.—The value of windbreaks for the orchard is a much debated question, full of pros. and cons., only a brief summary of the main points will be possible here. The gradual removal of forests in Ontario has rendered the sweep of winds over the farm lands more violent and more noticeable. Winds acquire, to a greater or less degree, the temperature of the area over which they pass, thus modifying the climate of every new district touched. Hence a strong wind from an open body of water will raise the winter temperature of the adjoining land, while wind from a colder area may have a disastrous effect. Wind is a powerful agent in the evaporation of moisture, and, apart from the more rapid evaporation in an open country during the summer, a strong dry wind may have an appreciably bad effect on fruit trees by evaporating the moisture in dormant twigs during winter. The value of a windbreak evidently, therefore, depends on the direction and character of the prevailing winds. Where strong land winds are of frequent occurrence, a windbreak is clearly advisable. To quote from Bailey: "The benefits derived from windbreaks are, lessening of evaporation from soil and plants; protection from cold; lessening of windfalls; lessening of liability to mechanical injuries of trees; retention of snow and leaves; the enabling of trees to grow more erect; lessening of injury from the drying up of small

fruits; retention of sand in certain localities; hastening of maturity of fruits in some cases; encouragement of birds; ornamentation."

The injuries from windbreaks are as follows: "Preventing the free circulation of warm winds and consequent exposure to cold; injuries from insects and fungous diseases; injuries from the encroachment of the windbreak itself; increased liability to late spring frosts in rare cases." This is a clear statement of the advantages and disadvantages of windbreaks, and the evidence is strongly in favor of windbreaks, unless they are unwisely planted so as to exclude warm winds that are often a fruit grower's salvation during a severe winter. The common objection to windbreaks, viz., that they harbor all kinds of bad insects and tend to encourage fungous diseases such as mildew, scab, etc., has some strength, but with the intelligent use of a proper spraying apparatus this objection loses its chief force, and care can also be taken that such trees as are especially infested by injurious insects and fungi are left out of the plantation. As a general rule a mixed windbreak is advisable of two or even three rows. It should usually be not too dense, checking the violence of the wind rather than excluding it altogether. Norway spruce, Austrian and Scotch pines are effective; and amongst the deciduous trees those should be used which are most healthy and thrifty in the locality.

THE SOIL QUESTION.—Having decided as to climate, location and exposure, it would become necessary to consider the matter of soils for fruit, and under this head "drainage" and "tillage" will also be referred to. It may be said in the outset that nearly all soils so far as their mechanical texture is concerned will produce with fair success the various fruits, provided that the necessary conditions of fertility, proper drainage and cultivation are fulfilled. The fulfilling of these conditions, however, becomes a some-

what expensive and laborious matter in some cases. And other things being equal, certain fruits will undoubtedly thrive better on special kinds of soils, and even different varieties of the same species of fruit have their soil predilections. So that it is better to ascertain the nature of the varieties to be planted, if possible, before giving them an uncongenial home. The kinds of soil best adapted for the cherry, the pear and so on will be touched on in the chapters devoted to those fruits. Any man who has decided to plant fruit trees of any kind should at once make up his mind that no matter how good the site, or how valuable the variety, his time and money will inevitably be wasted if his land is not properly drained. Some trees may exist under adverse conditions of this sort, may even partially succeed for a time, but "failure" must be the final word. A porous soil, soils of a sufficient elevation to provide good natural drainage, these with care may give excellent results, but broadly speaking underdraining will always abund-

antly repay its expense in the case of practically all fruits. Amongst the many benefits derived from the proper system of underdraining are the following: The raising of the soil's temperature; the freeing of all surplus water from the subsoil; the liberation of much plant food, which though in the soil otherwise remains inaccessible to the feeding roots; the making of the soil both moister in a time of drouth and drier in time of excessive moisture. On land well drained the root system of the tree is not only vastly more healthy, but the feeding rootlets commence work earlier; the tree makes a more rapid and vigorous growth, and is in a far better position to develop plump sound fruit buds and to ripen its wood for the winter. These are great gains, and under ordinary conditions the orchardist who has once experienced them will not be likely to neglect the underdraining of other lands he intends to plant.

M. BURRELL,

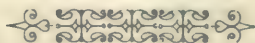
St. Catharines.

(*To be Continued.*)

NUMBER OF TREES ON AN ACRE.

30 feet apart each way	50	10 feet apart each way	435
25 feet apart each way	70	8 feet apart each way	680
20 feet apart each way	110	6 feet apart each way	1210
18 feet apart each way	135	5 feet apart each way	1746
15 feet apart each way	195	4 feet apart each way	2725
12 feet apart each way	300	3 feet apart each way	4840

RULE.—Multiply the distance in feet between the rows by the distance the plants are apart in rows and the product will be the number of square feet for each plant or hill: which, divided into the number of feet in an acre (43,560), will give the number of plants or trees to an acre.



THE USE AND MISUSE OF THE PRUNING KNIFE.



WRITER in "Gardening World" treats upon the above subject, and certainly it is a most seasonable one for us also in Ontario, because during the mild days of early spring the larger part of the pruning of orchard trees is done by our fruit growers. Our English friends are well trained in the art of pruning, and we might learn much from a study of their methods. As a matter of fact many of our fruit growers have no ideal or system; they have a vague notion that the tree has too much wood and must be thinned, and they go to work with saw and axe in the most reckless fashion. Such men are well named "tree butchers," and often do more injury to an orchard than can be remedied in years of patient nursing.

Some orchardists we have met, very carefully cut off the fruit spurs along the main limbs, making them as clean as a boat mast, and about as free from fruit. Others cut out great limbs from the centre causing a forest of sprouts or from the sides of the trunk making the tree almost inaccessible to a ladder.

Such work is a waste of energy both of tree and man, and we hope our Agricultural Colleges will soon man our farms with men who will have some training, and who will do their work intelligently.

Our orchard trees do carry too much wood, and do need thinning, but it needs to be done with an eye to the symmetry of the tree, and to an even distribution of the fruit. Even a neglected orchard must not be butchered, it must be gradually brought to an ideal condition and not all at once. Large limbs must not be cut, for the wounds will result in hollow trunks, and premature decay. Patiently remove a portion each year until the proper condition is reached; not by removing large central limbs, but by thinning the smaller ones on the outside of the tree head in every part. This is much more laborious than cutting out at the centre, but is much more sensible, because

it is done at the point of growth and productiveness.

The thinning of the fruit may in this way be partly accomplished as well as the thinning of the wood, two objects of equal importance.

Plums and pears are much inclined to grow long sprawling limbs, which should be cut back to form a symmetrical tree; and in the case of pears we always allow a few side shoots along the trunk which may be grown into a new top in case of blight. In case of dwarf we aim at the pyramidal form of the tree which is less inclined to be blown over with the wind, more convenient for fruit gathering, and more symmetrical than any other form.

Peaches should be well cut back every year, and the dead or weak branches cut out of the interior. Too much stress cannot be laid on the importance of all this work in the production of high grade fruit, which is so important just now for success in capturing the British market.

Fraser, the writer above referred to, writes on this subject as follows:

"It would be interesting to know what idea actuates the mind of many of the great army that wields the shears, the hedge-bill the saw, the secateurs and the pruning knife. It may be, and no doubt is, the case that many of them are victims of mistaken notions, like the apprentice who was set to grind the tools in his master's absence one day; and, when asked at night whether he had ground all the tools, replied in the affirmative, except that he had not been able to grind down all the teeth of the big saw. To make a guess at the intentions of some pruners of deciduous trees whose handiworks we have witnessed, one would imagine that they had been sent to give the trees a good hacking; and if so, they carried out their orders to the letter. The jobbing gardener is often blamed for his accomplishments, but he is no doubt a victim of the order to tidy up the place, and give the inmates room to perambulate in the narrow con-

fines of their gardens. Many owners desire to have gardens, yet from lack of knowledge and intimacy with the varying laws of Nature in each individual case of the trees or shrubs, they proceed to work or give orders in such a way as to show an utter lack of sympathy with the subjects in hand.

"We have seen a pear tree on the walls of a house, and one who was supposed to be an experienced hand was set to prune it. Not only was the breast-wood hard cut back but the spurs were cut back too, quite irrespective of whether there was fruit buds below the cut or not. This as a matter of course precluded the possibility of fruit the following season. Quite recently we heard of the good wife of a house taking a fit of gardening in her lord's absence, and pruning the side shoots of the vines hard back to the main rods, and that too while they were yet far from mature. Possibly she had been reading about the installation of the new Adam in the gentle art of gardening, and had felt justified in coming to the support of the new profession. There are those whose conception of pruning is to shear in the bushes equally on all sides, whether evergreen or deciduous, so as to make them as uniform as possible. There is another kind of uniformity that is equally offensive to the eye, and altogether objectionable. This is the practice of pruning large trees all to one uniform shape, not merely that straggling branches may be headed back, to make the trees more compact and symmetrical according to their kind, but to fashion them according to one preconceived ideal. When such trees are leafless they are of ten strongly suggestive of scarecrows. The system of pollarding trees, especially Willows, in wet meadows is so common in the south that many have come to look upon such artificial creations as the right and proper thing. Naturally grown trees are, however, infinitely superior in every way, more graceful, more umbrageous, and more handsome, whether seen from near or from far in the landscape.

"There should always be some object in pruning, though we feel that every wielder of the knife would be ready to affirm that he was guid-

ed by that aim. If the object is that of utility or ornament, the hand must be guided both by reason and taste in the latter case, and at least by reason in the former; otherwise there can be no intelligent pruning. In the case of fruit trees a considerable amount of skill and judgment are necessary to treat each variety of tree according to its natural inclination to produce fruit buds at particular places of the previous year's growth or otherwise. There is a considerable amount of variation even in this respect amongst apples. Trees belonging to other species and genera also require sympathetic treatment, and he cannot be considered a skilled or expert fruit grower who has not carefully studied all these peculiarities.

"Flowering trees and shrubs require equally skilled treatment to secure the best effects they are capable of producing. It may be as well to remember here that sub-tropical effects from foliage are sometimes desired, and that in this case pruning consists chiefly in cutting the branches hard back so as to encourage the development of rampant growth, for upon such the size of the leaves depends. Large leaves, each according to its kind, can only be obtained upon strong young wood, and the pruner is guided accordingly. When he is sent with his ladder, hammer, nails and shreds to prune flowering shrubs upon walls, a task has been set him that is not easily accomplished, if he is to acquit himself properly of the task, unless he has previously been a keen observer of the habits of each respective species. Unless accompanied and closely superintended by a skilled hand, he is apt to overlook the fact that one tree may flower from the wood of the previous season, it may be in the spring, while another may flower on the young wood produced in summer. Should the present time be adopted for the pruning of wall, the wielder of the knife must not prune away the young shoots of *Chimonanthus fragrans*, *Jasminum nudiflorum*, *Forsythia suspensa*, *Prunus triloba*, nor *Ribes speciosum*, as all these flower on the wood made the previous summer. The first two mentioned would have been in flower by this time but for the un-

genial weather. In the warmer and more favored portions of the country this may have taken place. Their pruning must be deferred till flowering is over, after which they may be hard cut back if strong and vigorous. They can then be reduced within proper bounds. In the case of weakly specimens of *Chimonanthus* it is better to leave a sufficiency of wood to cover the nakedness of the walls. The pruning

of *Lonicera sempervirens* and many *Roses* may be accomplished at once if they are perfectly hardy, making allowance for those roses which flower all along the wood of last year on the side shoots of the same. Lilacs, Guelder roses and Mock Oranges should receive the necessary pruning after they have finished flowering in summer."

A SMALL ICEHOUSE.

NOW that we have found how important a feature of a fruit storage house cold air forms, every enterprising fruit grower will be interested in providing means for its production. By and by, when liquid air is a commercial article, no doubt we can do away with frozen water, but in the meantime it is important to lay in a supply of ice and this is usually the best month for storing it. Dierhold, in *American Agriculturist*, gives valuable hints intended for a cheap family ice house, but the principles are the same as for a larger one, so we give them place:

"So far as ice is concerned, the best economy is to use it in profusion. Have as much as you want, but cut and store the ice yourself, or buy it at wholesale in winter, when it is cheap. Every family that has room enough out of doors for a small icehouse will save money by building one. It should be as much a part of the establishment as the refrigerator in the kitchen. Ice melts faster in free air than in confined air, faster in water than in confined air and faster in the sun than in the shade. It will melt in any icehouse. It simply melts slowly in a good one and rapidly in a poor one. Reduced to its simple elements the success of an icehouse depends upon site, drainage, ventilation and construction. The best site for a family icehouse is some shady place under a tree, or the north side of a building which is also protected from the wind. Shade is of the first importance and shelter from the wind the next, so, if there is a choice, take the shady place. If a good position cannot be

found, put it anywhere. The melting ice in the house causes a constant flow of water. If the soil on which the house is to stand is sandy or gravelly, and has a gentle slope, there is nothing to do but dig a cellar about two feet deep and fill it with stones. Cover the upper layers with small stones and sand. This will make the floor on which the ice is to rest. The water will escape easily through the sand and stones and there will be no chance for currents of air to flow upward into the house.

The tendency of the air in a badly made icehouse is always to flow through it. Therefore, while there must be drainage, there must also be an absence of inlets for air. If the soil is wet and not easily drained, the surface must be covered two feet thick with stones and the house placed on top of this. If this is done, the sides of the stone work must be made tight with mortar to prevent the entrance of air. If provision must be made for carrying off the water, the pipe must be trapped to prevent the air from entering the pipe and thus getting into the house.


A well drained foundation having been prepared, a wooden sill must be laid, on which the walls are to rest. On this sill will rest the uprights. These may be simply planks eight inches wide and two inches thick. They may be placed at intervals on the sill and held in place by a stringpiece on top. On the outside of the uprights may be nailed boards with battens or clapboards. On the inside they are simply boarded up with cheap stuff. The whole aim is to make a hollow wall. The space between

the outside and inside boarding must be filled with tanbark, sawdust or rough chaff of any kind. Upon the walls place a common pitch roof, boarded and battened or shingled. It must be rain tight, but must not be air-tight. There should be an opening at the ends, or a hood or ventilator, to permit a free circulation of air through the upper part of the house. The door should have double walls filled with sawdust. These, in brief, are the conditions: Perfect drainage, double walls filled with sawdust, no entrance for air below and free ventilation above.

The ice should be laid on a foot of sawdust

or chaff and a space of 12 in. all around between the ice and the wall should be filled with sawdust, as well as all the cracks between the blocks. When it is all in the house, sawdust is spread 2 feet deep on top of the ice. The cost of an icehouse must vary with the price of labor and materials. A house 12 ft. square and 10 ft. high will hold enough ice for one family and certainly will not cost much money to build. An icehouse should always be painted white, and if convenient it should be covered with vines, which will partly neutralize the heat of the sun's rays."

THE ANJOU PEAR.

 ONE of the most satisfactory export pears thus far tried is the Anjou. Its large size, attractive yellow color when ripe, its fine juicy texture and excellent quality make it a valuable late fall pear in any market, while its shipping qualities make it most valuable for distant markets. As a standard it is not very productive, and the fruit is much smaller than when grown as a dwarf. Whitcomb in "Country Gentleman" gives his experience on this point as follows:

"Among a number of hundred which we have in bearing, and which were set in the '70s, there are a few which correspond to the views of the leading orchardists at the present time; and that is, that better results follow if planted on quince stock. We have taken particular notice of the fact, even before and since the ravages of the pear psylla, that these trees have proved more prolific, and as a rule are much more certain of being annual bearers.

These trees, if planted on quince, must be planted very deep in order that the young stock, after becoming well rooted, will soon begin to take on a new set of fibrous roots, from above the union, which will be of the pear stock, and not of the quince. When this is done, the tree is much more self-supporting by the growth of the stronger roots which come from the pear stock, thus preventing it from being tipped over

by the prevailing winds. Also, this tree will practically be headed without any height of trunk whatever, and at the same time with nearly if not quite as large a top. And in this instance the strongest reason for not growing the Anjou pear is overcome, namely, that of being so easily blown off. The trees are put five or six feet nearer the ground and thus escape the swaying produced by heavy winds. In fact, this has become so well established that one of the leading nurserymen of the state has top-worked over an old Duchess orchard in the manner described to an Anjou orchard.

The advantages in spraying are also such as commend this practice to common use, as the trees are much lower and much more conveniently covered with spraying materials. A good wind-break is also considered by reliable authorities to be of great use in keeping this kind of fruit on trees until proper time of picking. This fruit well grown is universally a good seller, which makes it attractive from a commercial standpoint."

THE REINE CLAUDE is undoubtedly the finest of all plums for pies and preserves. Its flavor is most agreeable and its color an attractive yellow. In France this plum is grown in immense quantities for the Paris market.

REPORT OF THE SAN JOSE SCALE COMMISSION.

THE report of this Commission is just to hand, signed by Dr. Mills and Messrs. Dearness and Bunting, three excellent men in whom the fruit growers have every confidence. The recommendations of the Commission are very much in line with the resolution passed by our Association at Whitby, and help to evidence the propriety of our position. The Committee had visited Catawba Island in company with Prof. Webster of Ohio, an island which is a continuous orchard for miles. Here 3000 or 4000 badly infested orchard trees had been removed in a block, and the surrounding orchards, which were not seriously infested, had been treated to whale oil soap—from one to two pounds to the gallon. The result of the treatment is very encouraging, for the treated orchards had taken on an exceptionally healthy and vigorous appearance, and although the scale had not yet been totally exterminated, it had not done any damage since the treatment began. Indeed the owners claimed that the treatment had been a blessing to them, not only in destroying the scale, but causing the trees to take a new vigor, through being cleared of insects and fungi, notably bark-lice and curl leaf.

It was Prof. Webster's opinion that persistent treatment would effectually exterminate the pest in the course of a few years.

Among other good points in the report, the following suggestions regarding future methods of procedure will be read with interest:

1. That the work of inspection, in a modified way, be continued for some time.
2. That the knowledge of sub-inspectors be tested, and none but certified and approved men be employed.
3. That the inspector be authorized to destroy at once all trees and shrubs which show signs of serious injury from the scale, or have their trunks and principal branches incrustated therewith.
- (b) Badly infested trees and shrubs of un-

profitable varieties, or in unhealthy condition, even though not very much injured by the scale.

(c) Single infested branches or limbs on trees which appear to be otherwise free from infestation.

4. That all infested trees and shrubs, except the above, and all exposed trees and orchards be thoroughly treated according to the most approved method.

5. That large discretionary power be given to the inspector in dealing with isolated infestation in districts that are otherwise free, or supposed to be free from the scale.

6. That in order to secure effective treatment the work be done by the Government, but the owner be required to pay for the material and board the men and horses during the time of treatment, with the proviso that this course is only to be pursued with infestations discovered after that date be destroyed without compensation, or treated wholly at the expense of the owner.

7. Provides for frequent treatment in summer time of badly infested trees in foliage, which involve risk to neighboring orchards.

8. That the inspector be authorized to order the destruction of small trees and shrubs growing in fence corners and other places, where in his judgment, the removal of such growth is necessary to check the spread of the pest.

9. That owners be paid one quarter of the value of their trees without discount, and that the fruit on a tree be regarded as part of its value.

10. Provides that the method of valuation be modified so that the owner may be represented.

STOCK JOBBERS are already in the field offering a gullible public shares in liquid air stocks, much as they have recently been reaping rich harvests selling "salted" mining stocks. We warn our readers against all such tricks to get their money.

NOTICE OF THE HARDY FRUITS OF UPPER CANADA.

*To the Caledonian Horticultural Society**Edinburgh.**

DURING my residence in Upper Canada I had frequent opportunities of seeing and admiring the profusion of fine fruit produced in that country, the apples in the orchards are particularly fine. accustomed as I had been to see fruit-trees in general raised only from grafts or buds, I had no idea of the facility with which apple trees can be raised from seed, and in a very few years, in that fine climate, produce abundance of excellent flavored fruit. There are many of the trees, however, that produce fruit fit only for cider, which are more valuable to the inhabitants than the fine sorts, as they can find a ready sale for their cider which they could not do for their apples, were they ever so fine flavored; and for that reason they are at no trouble in selecting their seed from the finest kinds, or grafting or budding from them.

The inhabitants of Lower Canada seem to have paid considerable attention to the cultivation of fruit-trees for a length of time, as may be judged from the fine specimens of healthy old trees that are to be seen in their orchards. They cultivate several kinds of very fine apples, which have probably been introduced from France, particularly the Pomegrise, Bourassa and Fameuse; they are also beginning to cultivate several varieties that have been grown from seed in the country. I have no doubt whatever, that, if proper care is taken in saving of the seeds, seedlings will be procured so similar to the original in appearance and flavor that the difference would not be easily detected. I was informed that the island of Montreal, about thirty years ago, was much famed for the quantity and excellent quality of its pears, but now

there are very few of that fine fruit in the country, part of the young ones are in an unhealthy state, and no person could assign any cause for this general decay of their pear trees. The Kentish cherry succeeds better than any other that I have seen cultivated in any part of North America that I have visited; they produce fruit in great abundance, and certainly better flavored than in this country. They are propagated from suckers chiefly, which leads me to suppose that the original trees have been propagated from seeds imported from Europe. I have seen good crops of some other kinds in Kentucky and Virginia, viz., blackhearts, May dukes, etc.; but there the trees are much injured by the intense heat of the sun, and most kinds of cherry trees grow very erect, from which circumstance the foliage can yield no protection or shade to the stem or trunk of the tree, and in a few years it will be completely decayed, except a small piece of wood and bark on the north side. I observe that the branches that were shaded from the sun by their own foliage had sustained no injury from the above cause.

Peach trees succeed tolerably well in Lower Canada on walls; in Upper Canada, particularly on the Niagara river, they succeed very well as standards. They grow with great rapidity, but very little attention is paid to them; they are all raised from seed, and many will produce blossoms, if not fruit; the third summer. A few are large and fine flavored fruit, and many tolerable.

Quinces, on the Niagara river, produce generally a good crop. They are certainly a finer flavored fruit than those produced in England, being free from the disagreeable smell that the English quinces have, and are esteemed the best fruit for preserving in that country. The trees are remarkably dwarf, which I suspect is owing to the method they have in propagating them, which is altogether from cuttings, and these are generally branches of considerable size, and planted in the spring.

* This paper is one that I picked out of a book of the minutes of the Royal Caledonian Society, Edinburgh, read at that Society's meeting in the second year of its existence by one of its directors, when the King was one of its patrons.

RODERICK CAMERON,
Niagara Falls.

NOTES ON SMALL FRUIT CULTURE.

CURRANTS.

CHERRY.—Is the largest and most showy of all red currants, but with me it has been a failure. The bushes grow very heavy soft wood, with soft pithy heart. The currant borer eats all the centre out, causing the wood to die. Shoots that escape the borer bear well.

WHITE GRAPE.—With me has always been a success for the last twenty-five years, giving me an average crop even in frosty seasons when other kinds has been a failure. The bushes grow somewhat dwarf and are covered with a very heavy coat of leaves, and the limbs droop over each other so that they protect the fruit from late spring frosts almost entirely. Fruit and bunches large. Excellent for table use, not so acid as the red varieties. Will hang on the bushes till October.

FAY'S PROLIFIC.—Is a fine free grower, bearing large, showy fruit of good quality, but on my soil seldom produces an average crop.

RABY CASTLE (OR VICTORIA).—Is a very rapid strong grower and a very heavy bearer of long bunches of medium size fruit of good quality. Some of my bushes are eight feet across and yield from thirty to forty quarts each. It is decidedly the most profitable of the red sorts. Hangs on the bushes till late in the season without spoiling.

BLACK CURRANTS of all kinds are a failure on my soil. The bushes grow well, but never produce a paying crop. I believe the cause of failure to be too dry a sub-soil, my land being

at the depth of from two to three feet underland with dry, loose gravel.

STRAWBERRIES.

BUBACH.—I received from our F. G. A. some years ago, but I did not make a success of it. It bore well when I could get good young plants; some seasons I failed to get good young plants almost entirely.

MARSHALL.—Is a large, fine showy berry. Quality very good. Gives here only a moderate crop. Makes plenty of strong young plants every season. I find it somewhat tender in winter.

BRANDY WINE—Fruit large and handsome. Quality good and a fair bearer. It sets plants well and winters well. It ripens late.

PARKER EARLE.—Is a late variety, medium size, excellent flavor and very firm. Not productive enough with me to be profitable.

JAMES VICK.—Has been the best and most profitable berry on my soil that I have yet tried. The plants are very strong and vigorous. It sets plenty of young plants that winter well. Blossoms late, so that it is seldom hurt by spring frosts. Fruit large. If plants are given plenty of room it sets such a quantity of fruit that unless plants are well thinned the fruit will be small. The fruit stems are strong and hold the fruit well up from the ground. Berries are firm, quality very good and will keep longer on the vine than most sorts.

St. Mary's, Ont.

S. H. MITCHELL.

THE BEN DAVIS IN N. S. AND P. E. I.

WHILE Rev. Father Burke, of Prince Edward Island, and Mr. S. C. Parker, Secretary of the F. G. A. of Nova Scotia, agree perfectly as to the thrifty character of the Ben Davis in Nova Scotia and Prince Edward Island as elsewhere, there would appear

to be some grounds for Senator Ferguson's remarks commented on by those two gentlemen. The Hon. Senator had been attending exhibitions and possibly conventions in Nova Scotia, where no doubt several speakers held the views he took up. The esteemed Secretary of the

Nova Scotia Association seems to have overlooked in his interesting article of last month a discussion given in his own last annual report, page 97, where this occurs *inter alia* :

"John Donaldson : With respect to grafting the Gravenstein on the Ben Davis—the latter is a *slow-growing tree*. I am afraid Gravenstein would grow out of Ben Davis. I have grafted Gravensteins on the Cayuga Red Streak.

"Professor Sears : I only gave the matter as an example. I have not thought it out. *But your objection is a good one.*"

With those opinions openly expressed in convention and printed in the annual report of the F. G. A. of Nova Scotia, then it is not strange that Senator Ferguson acquired this impression that Ben Davis was a *slow grower* in Nova Scotia. Mr. Donaldson may have been mistaken, but in our official reports it will be well always to revise the discussions carefully and see that no unreliable information is let out uncorrected, for the inexperienced, looking for information, will accept such and have a right to accept such reports as thoroughly reliable. But it is satisfactory to know now on the best authority that the Davis is a "grand grower" and a grand bearer in N. S. and P. E. I.

A. E. BURKE.

Alberton, P. E. I.

SIR,—I notice on page 483 of the December number, from A. E. Burke, that Senator Ferguson went home from visiting us during the exhibition with the idea that in Nova Scotia the Ben Davis tree was regarded as slow growing, delicate and of short duration. I can assure the genial Senator that he carried away a very erroneous impression of the popular idea in Nova Scotia concerning the Ben Davis. Certainly public opinion here would concur with Mr. Burke. The Ben Davis tree in Nova Scotia is a rampant grower, a remarkably early and prolific bearer, hardy and healthy, always clean and thrifty. If any person thinks its career will be short, and many do, it is because of its poor quality. We fear that when it becomes well known in the English market it will fail to sell. While on the authority of Prof. Craig, in Gravensteins and Ribstons the Annapolis Valley has no equal on this continent, it seems like tempting Providence to plant an apple that as grown with us is at best third class and much inferior to the same apple as grown in the Middle and Western States.

Personally I am of the opinion that Stark is fully equal to the Ben Davis as a grower and bearer, and being larger will be a more profitable apple.

Berwick, N. S., Dec. 20, '99. S. C. PARKER.


COLD STORAGE FOR FRUIT GROWERS.

THE fruit farm is the proper place for the cold storage of fruit. This is the consensus of opinion of all authorities. There are many reasons, but the one which appeals most to farmers and sellers is, that with cold storage on the spot, the fruit will not be damaged in handling before it reaches cold stores in the selling centres. Another thing : with the farmer having a knowledge of cold storage he will be more careful of his own harvest in putting it where it will keep. He will reap the profits consequent on the rise in prices where he only received the market value of his product.

This will be added to the value lost in deterioration caused in transit. Thus the grower will, with his own cold stores, obtain from one-third to one-half more for his crop than he would if he possessed no storage facilities.

In the grape districts in Western New York the growers have their own cold storage, and they have found that the grapes picked from the vines and carried direct to storage keep much better and longer than any put in cold storage in the cities. These grapes can be marketed in the middle of winter without much loss from waste.

THE PEACH.

 HE Kansas State Horticultural Society has published a volume on the peach, giving very complete directions for planting, care, gathering, and marketing this fruit. A considerable amount of the matter is unsuited to Ontario, but we make a few extracts of portions that are applicable to our conditions.

SOIL.

The soil for a peach orchard should, if possible, have a good clay subsoil, naturally well drained, and be rich enough to produce a fair crop of wheat or corn to the acre.

Some people appear to think that if they have an old field that is so exhausted it will not produce profitable farm crops any longer, and is washing into gullies, there is the place to plant an orchard. No greater mistake can be made. If you are not willing to devote good land to the orchard, our advice would be to let the business alone. In the region of country for which I am writing we find that the so-called red lands, as well as the grey, and those that are composed of sandy loam with a clay subsoil, all produce first-class peaches.

PREPARATION.

The entire surface should be plowed deeply before planting; then check each way with a plow, planting where the furrows cross each other. Dig the holes sufficiently large to admit the roots without cramping. In locations where the subsoil is poor, it is advisable to dig a hole, say three feet in diameter and eighteen inches deep, and then fill up with good surface soil, leaving the excavation that is to receive the tree of such a depth that the tree, when planted, will be about the same depth, or a little deeper, than it grew in the nursery. The proper distance apart for planting is from sixteen to twenty feet each way. In orchards with sloping or uneven surface we generally recommend locating the rows as near a horizontal

line as practicable, about eighteen feet apart, and the trees in the rows sixteen feet apart.

VARIETIES.

The selection of varieties for the commercial orchard is a point that is vital to its success and in making this selection there are a number of considerations that demand our attention. While I do not condemn new varieties, yet it is wisdom on the part of the commercial grower to "touch them lightly" until he has tested them himself, or they have been tested by others in soils and locations similar to his own. Then there is the matter of hardiness in fruit, and consequently greater certainty in producing regular and paying crops. For while a variety may be beautiful in appearance and first-class in flavor, it may, on account of its unproductiveness, be unworthy of a place in the commercial orchard. The grower should also study the markets that he wishes to supply, that he may learn what style of peaches is most in demand in these markets. He should also study the production of other peach centres with which he may be brought in competition. For instance, if some other favored locality sends, at a certain season, large quantities of some leading, first-class variety to market, it would not be wise to endeavor to compete with them at the same season with any variety in the smallest degree inferior to what they are sending in such large quantities to the market.

The commercial grower should therefore confine his list to a few varieties. If the fruit is being grown for a home market, then, of course, a great range would be admissible. . . . A good reason for planting only a few varieties is that this will enable the grower to have his fruit carried to the market at less expense. Having large quantities to ripen at once, he can ship by car-loads. The difference in cost between this method and express, affords quite a profit in itself. If I were planting an orchard of only 5000 trees, and had no one at the same

shipping point to unite with in making shipments, I would plant only one variety.

PRUNING.

The work of pruning begins before the tree is planted ; first, all broken and bruised roots should be cut back to sound healthy wood, with a sloping cut on the under side of the root, always using a sharp knife.

If there are any side branches they should be cut off, leaving a single straight stem, cut off at the height of one foot to eighteen inches from the ground. There are many good reasons for having our orchards branched this low. When the trunks are shaded they are less liable to disease. With no long trunk for leverage they are less liable to be blown over by storms. When trained with low heads, pruning, thinning and picking can be done for a tithe of the expense involved where the workmen must use ladders to enable them to reach the high and widely extended top.

The planter should aim to have four or five well-developed buds on the upper part of the trunk when planted, as the new branches grow from such buds more readily and vigorously than from those near the base of branches that have been cut off. Three or four of the branches that grow out the first season will be needed for the framework of the future tree.

By rubbing off as soon as started all superfluous shoots the grower can, to some extent, economize growth, but if not rubbed off they can be cut out at the first pruning after the tree has attained a year's growth.

During the latter part of winter, before the trees start into growth, all shoots not needed for the permanent head of the tree should be cut out, and those left (which should have attained a length of three to five feet) should be cut back to two feet or two and one-half feet.

It has been customary to cut back even shorter than this, say to one foot or eighteen inches, but the tendency of such very close pruning the first year is to have the tree too dense, its leading branches too close together. Each of these main branches will, the second

year, throw out leaders, each of which will make a growth of four to six feet. At the second annual pruning the first aim should be to establish a broad, low, open-headed tree. This can be accomplished by first thinning out all crowding inside branches, and shortening in all others from one-half to three-fourths of the year's growth, doing the closest cutting in the central top.

The third year's pruning should be on the same general plan, having the same object in view, to establish a well-formed tree best suited to produce the greatest quantity of fruit in the highest perfection. Pruning must be kept up year after year, but as the trees grow older less severe cutting will be required. The aim should be to avoid long, bare branches that only bear fruit at the extremities, and, as a consequence, break down the trees.

No specific set rules can be given for pruning, but every one who would prune intelligently must study the characteristics of growth and fruitage of the trees upon which he would use his knife.

Pruning may be done at any time during winter, but we prefer to have it done after the buds begin to swell in early spring. If done earlier it tends to hasten the development of the buds left, thus increasing the liability to injury from frost, and if buds have been injured before trimming you can then trim to retain as many live buds as possible.

THINNING.

This operation is necessary to success, but one that puts the nerve of the inexperienced grower to a severe test. This work can be partially accomplished by pruning as we have intimated, and some seasons the late frost will do the work even more thoroughly than we may desire.

It is not unusual in a good season for a four-year-old tree to set 800 to 1000 peaches, which, if left on the tree, would measure two bushels when ripe, and be worth perhaps fifty cents per bushel ; but if all down to 300 were pulled off, these, when ripe, would also measure

two bushels, but be worth two dollars or more per bushel ; and while the small peaches could only be shipped at a loss, the larger ones would yield a handsome profit.

A large per cent. of the edible part of a peach is composed of water ; hence it is the formation of the seed that exhausts the vitality of the tree. The perfecting of the seeds of such an immense number of peaches will frequently exhaust the vitality of the tree, so that it cannot produce another crop for years, and this is one reason why peach trees allowed to overbear are usually short-lived. Peaches should always be thinned before the seed begins to harden, while you can still run a pin through them without meeting any obstruction from the seed. If any show marks of having been stung, or are in any way faulty, they should be taken off and destroyed.

We should leave the peaches as equally distributed as possible, from four to six inches apart, all over the tree. The cost of thinning should not be considered, as if they were left on they must be picked when ripe, and it certainly will cost less to take them off while small, to say nothing of the vastly increased value of those that are left to fully develop.

Remember that overbearing is the "besetting sin" of the peach tree, and that thinning *must* be done if you would grow the finest fruit. If we were asked to give the approximate number of peaches that should be allowed to mature on a tree, we would say, for a three-year-old tree, about 150 ; for a four-year old, 250 ; for a five-year-old, 400 ; but seldom over 600 for a tree of any age.

CULTIVATION.

It is just as reasonable to expect a good crop of corn without the same care. During the first two or three years some low hoed crop, such as peas or melons, may be grown in the orchard, but they should not be planted too near the trees, and the space around the young trees should not be neglected, but should be kept clear of weeds and grass and the surface mellow.

The cultivation of young orchards should be suspended about the 1st to 15th of August each year, in order that the young wood may mature

before winter. Cultivation should be kept up in the orchard as long as it lives. It should commence in the spring, as soon as the blossoms open, when the orchard should be carefully plowed, being careful not to plow so deep as to injure the roots.

For subsequent cultivation, on lands not too rough or stony, the Acme or Cutaway harrow may be used, thus saving much time and expense. It will, however, usually be necessary to use a one-horse cultivator directly in the row and next to the trees.

We need scarcely caution the orchardist that great care should be exercised in the work of cultivating not to break the branches or in any way mutilate the trees. Cultivation should be kept up as often as necessary to maintain the surface in good condition until in August.

FERTILIZING.

Of the three essential constituents of plant food—nitrogen, phosphoric acid and potash—nitrogen is of the greatest value in promoting growth and forming wood. This fact indicates that manures or fertilizers rich in nitrogen should be used during the first years of growth in the young orchard.

Of this class of fertilizers, we might mention well-decomposed barnyard or stable manure and cottonseed-meal, which should be applied early in the season, to be turned under at the first spring plowing.

When planting no manure should ever be put in direct contact with the roots, but in some soils a few handfuls of fine bone may be mixed in the soil about the roots. When the peach tree comes into bearing, phosphoric acid and potash are necessary to the proper development of size, beauty and flavor of the peach. These elements can be supplied by fine ground bone and muriate of potash, or hardwood ashes. Many orchards become unprofitable because they are not properly fertilized. One great reason for the failure of so many orchards is because they are starved. After the trees come into bearing, they have to perform the double function of developing wood growth and perfect-


ing the fruit, and the failure to perform either of these functions properly is evidence that the soil must be enriched or the orchard will no longer be profitable.

The rootlets that absorb the plant food necessary to the growth of the tree and the perfection of its fruit are found away from its base; hence

the fertilizer should always be applied broadcast over the entire orchard.

The practice of piling up manure around the base of the tree is about as sensible as it would be to apply a poultice of bread and milk on a man's stomach to alleviate hunger.

A NEW PACKING MATERIAL FOR FRUITS.

N interesting experiment has just taken place in the matter of packing fruits in the colony of Victoria for shipment to England, says the *Gardener's Chronicle*.

As is pretty generally known, apples and pears are now brought from the Cape of Good Hope and from Australian colonies in boxes holding a bushel, which are stored on board ship in cool chambers. These chambers, or refrigerators, have been provided by the steamship companies at a considerable outlay of money. The fruits are merely wrapped in tissue and placed in the boxes.

Under this system apples have for the most part come very successfully, but pears have been less satisfactory. Occasionally, there have been pears from the Antipodes that have reached this country in a sound condition, but numerous consignments have proved to be of little value, and the commission agent is never able to speak of such fruits or gauge their value until they have been unpacked. The freight per bushel from Victoria to London for apples or pears so packed and stored on board ship in cool chambers is 3s. 9d.

Such are the circumstances of the present system, and the amount of freight paid for passage.

And now for the experiment, for intelligence of which we are indebted to Mr. J. B. Thomas, a well-known fruit salesman in Covent Garden, to whom the fruits which have been the subjects of experiment were addressed.

Instead of packing the apples wrapped in tissue only, in the case of several bushels that have recently arrived in London by the ss.

"Wakood," a quantity of asbestos, or a preparation of this substance, has been used. The fruits were wrapped in tissue as formerly, and afterwards embedded in the asbestos, each fruit being perfectly surrounded by this substance. Upon unpacking the case, the asbestos appeared to be caked, but it was easily broken up, and then appeared almost like flour. We should suppose, therefore, that the fruits would be airtight under such conditions, and this will account for the fact that as we saw them they were perfectly sound, and in excellent condition, although five months had elapsed since they were packed in the boxes. The apples were grown by Mr. J. R. Warren, Mount Alexander Orchard, Harcourt, and Mr. J. M. Ely, Rosehill Gardens, Harcourt, both large Victorian fruit growers. They were packed and brought to this country under the direction of Mr. George Pontin, Church House, Yapton, Sussex. The apples were gathered and packed previous to May 5 last year, but owing to some objection, we believe, on the part of the steamship companies, there was a delay of two months or more before shipment, and even then they travelled by the Cape route. The companies, naturally perhaps, object to the introduction of a new system of packing fruits that may render unnecessary the cool chambers that have cost so much money to provide. But such objections will, no doubt, be overcome, and if a syndicate be formed, as is now proposed, the system will be given a conclusive trial. The new system, should it answer to expectations, will possess several advantages. The fruit may then be stored in the "hold" of the ship, and the

freight per bushel case will be 6d. instead of 3s. 9d.; but as the packing material will displace a quantity of the fruits in each package, it may be well for the present purposes to describe the future freight of the fruit as 1s. per bushel. It must be remembered also that the asbestos is a valuable material in England, and it will be sold here to as much advantage as will the apples. The result will be that the asbestos and fruit would be brought to England for less

money than is now paid for the fruits alone. The apples will travel as well or better, and it is thought they may be preserved after arrival here for weeks if necessary, providing that the cases be not opened in the meantime. And beyond the other considerations, it is hoped also that Victorian pears, by this system, may be placed on the English market without much risk of loss by decay.

FLOWERS OF THE TRANSVAAL.

NOW that the eyes of the world are turned towards the Transvaal, the following paragraph may not be uninteresting to our readers regarding its flora:

It is an old disproved libel on South Africa to say that her birds are without song and her flowers without smell. Neither statement is true. The flora and fauna of the Cape Colony, Natal, and the Transvaal are various and fascinating. Many of the birds sing, and many of the flowers have perfumes peculiarly their own.

The gigantic Cape disa and the glorious Table Mountain heaths, of hundreds of varieties, have certainly no heavy perfume, but, on the other hand, the thousands of quaint little peeping veldt flowers, from pimpernel to orchid, have subtle suggestive odours which are exquisite and refreshing.

In the Cape Colony for many miles between the Paarl and Cape Town the line is bordered with so-called "pig-lilies." These are none other than our carefully-tended and garden-produced arums. But in South Africa they grow wild and in luxurious profusion. Near Ceras there are great fields full of these snowy-white blooms with their orange-yellow pistils; and to see a couple of little nigger children playing about in this amplitude of whiteness is a delightful study in black and white.

Up in the Transvaal, if a farmer cultivates flowers at all—and all Boers are not as unappreciative of beauty as their detractors suggest

—he almost always has on his stoop, or verandah, a couple of tubs containing plants of keitje perring. This is the gardenia of the commercial London buttonhole. It is smaller, certainly, but equally exquisite in scent, and with a little care it flowers in great profusion. The tuberose also flourishes amazingly in the open air with but the smallest attention and cultivation. At Johannesburg grows the easily-trained and useful grenadilla. This is a species of passion flower, with a pretty little feathery-starred flower and a very delicious egg-shaped, crinkled-up brownish green fruit, containing a yellow pulp with many flat black seeds. It has a cooling, slightly acid flavour, which must be tried to be appreciated. The grenadilla grows easily and quickly, and in flower, in fruit, and in foliage it is very beautiful.

THE KIEFFER as a dwarf is reported a failure by M. J. Graham in American Gardening. In 1895 he planted fifty first-class two year old dwarf Kieffers. Ninety per cent. were dead the end of the second season, and those which survived were found to have thrown out roots from Kieffer stock above the Quince. Other dwarf pear trees made good healthy growth. Certainly there is no use in planting Kieffer as a dwarf when it grows so rapidly as a standard and bears so early. At Maplehurst our Kieffer two years planted bore abundantly, one tree yielding two hundred pears!



WINTER ROSE TROUBLES.

IF ALL pests of the rose in the house or the greenhouse the red spider is certainly the most common and also one of the hardest to get rid of. The only practical cure or preventive for it is often overlooked by the young rosarian because of its simplicity; this cure is the "cold water" one. In commercial rose growing one of the essentials is a good water pressure for thoroughly spraying the foliage above and below on sunny days. In a conservatory it is, of course, an easy matter to apply the cold water cure with the hose or syringe, but with plants grown in the house they are difficulties enough. Rose plants cannot be effectively syringed in the window or on the plant stand; take them to the sink or bath and give the foliage as thorough a drenching as it would get in a driving rain storm. Do this every other day if the weather is bright; it must also be attended to on dull days during a continued spell of them.

The Scollay rubber sprinklers, of which several sizes are made, are a grand thing for sprinkling roses, in fact one is indispensable for the window garden. The red spider will be found on the under sides of the leaves, he often works away there, sapping

the life and substance from the foliage till the plant becomes unhealthy looking and receives a check that it will not recover from all winter. The minuteness of this insect is well illustrated by this amusing incident told by the late Peter Henderson in *Practical Floriculture*: "Many years ago I had in my employment a young Irishman, who, by showing more than ordinary energy, quickly passed through the different grades, until he was duly installed as foreman. At that time we had been firing a Camellia house, and by neglect of keeping a properly moist atmosphere, the red spider had made sad inroads. John was duly instructed to syringe the plants night and morning to destroy it, which he did, no doubt, with a double object in view, as the sequel will show. John was on all occasions rather demonstrative, but one morning he came rushing towards me, his face radiant with triumph, with his hat off, but clasped in his hands in a careful manner, evidently having something of no common value within it. Before I had time to inquire the cause of his excitement he yelled out: 'I've got him! bedad! I've got him at last.' 'What have you got?' I enquired, expecting to see something in the way of a rat or mouse. 'Arra the big

devil himself, the big blaggard that has been doin' us all the mischief, the *Reed Spider*, and opening his hat a villainous Tarantula-looking fellow ran out, bigger than a thousand spiders, which was quickly despatched by John's brogan. From that time John learned to know what the red spider was, but was never anxious to allude to it afterwards." Get to know this insect, if he has not introduced himself already; he is pas-



FIG. 1741. TEA ROSE IN A STATE OF REST:
PRUNED AND REPOTTED FOR SPRING
FLOWERING.

sionately fond of many other plants besides roses, and may do you a lot of damage some day unless you know how to checkmate him.

Mildew, as it attacks roses, appears like a fine white powder at the first; it is a fungous growth and unless checked will do irreparable damage; vigorous, healthy growth will do as much towards warding off this trouble, as it will insect pests, but there are times in dull winter weather or during a damp cloudy

spell when mildew will make its appearance, even in places where roses are grown as a specialty. In greenhouses it can at most times be prevented by applying sulphur to the heating pipes, mix it with water to the consistency of paste and apply with a brush when the pipes are hot; rather apply it often and in small quantities, too much will injure the young growth. Several of the insecticides offered contain some form of sulphur and will keep the plants free from mildew. It is our preference to use a remedy for each enemy, knowing just what it is applied for, rather than to use a doubtful "cure for all;" 2 ozs. of Sulphuret of Potassium dissolved in 4 ozs. of water and used as a spray is useful when the fire is not going. The green aphid, or plant louse, as it is sometimes termed, is the third principal enemy of him who would grow roses during winter. Fumigating the conservatory by burning some moistened tobacco stems is the usual remedy, the smoke will temporarily deprive the flowers of their perfume though. The use of a tobacco extract, such as *Nicko-teen*, will not effect the perfume. These extracts are diluted with water and after the solution is put into a metal vessel a hot iron is dropped in to evaporate it. For the window that possesses but three or four rose plants the following is simple and effectual: Cover each plant with a paper cone and give the smoking member of the family a cigar, of course he will consider it no hardship to blow a few whiffs into each cone; this will quickly rid the plants of green fly.

There are ways of preventing those rose troubles without insecticides—not that rose pests can possibly be entirely prevented without them, but the fact is that if you start with vigorous, healthy, plump-wooded plants and maintain proper temperature and atmospheric moisture your troubles will be minimized. As a man, full of vitality and strength, will escape many of the thousand natural shocks that flesh is heir to, so healthy

plants will in a great measure escape their enemies. Do not make the mistake of choosing indifferent rose plants for the purpose of winter flowering, intending by good culture to restore them to full vigor. Remember that in forcing a rose for winter flowers you are overcoming their natural inclination to rest in winter, and, consequently, drawing heavily on the life and energy of the plant.

Roses planted in the greenhouse in Sep-


tember or October (and there are many planted then) miss the season for putting on the kind of growth that makes good winter flowers a possibility. June and July are the proper months.

This year, at the proper season, we hope to give Horticulturist readers a few helpful reminders about early planting of forcing roses.

WEBSTER BROS.

Hamilton.

CONSERVATORIES IN OUR HOMES AT SMALL COST.

T our Whitby meeting Dr. Harrison, of Keene, gave an inspiring address on the above subject, which we publish now in advance of our report because the topic is a seasonable one.

DR. HARRISON: "I am to talk a little with regard to flowers. In our young country—because we are still in the condition of youthhood as a nation, beginning to feel that we have manhood coming to our shoulders, and that we must soon in God's providence take our place in the rank and march of nations—(hear, hear)—in our younger days we were satisfied with the flowers that were in the windows, and we took much pleasure and so much joy out of them. Why, you as well as I, sir, have been in many a home and seen with what joy and pride the lady of the house looked at that spindly thing in the kitchen window. It was the dead of winter, but it had a few sickly green leaves on, and it was a joy to her heart. But as we have advanced in our social surroundings and in our better equipment all the way round, the demand is that that æsthetic sense—which is one of the senses that has not been taken cognizance of as it should have been—demand a better quality of flower and a larger variety. Look at this exhibit and think of the fruit we had when we were boys. I had the pleasure of

going to a school, walking a mile and a half, and it was a joy to our hearts when December came that we could go over to a crabapple tree with apples about that size (showing) that would draw your mouth up. Were any of you in Toronto during the last chrysanthemum show at the Pavilion? Look at those massive things. You could have those in your homes. Look at those ten inches in diameter. Look at those orchids which stood up on that dais; you can have these things. Look at those carnations which were so charming, and those roses which Dunlop had there; we can have those too, and not at great expense. How? That is the first question. There are two ways within the reach of every person of average means. In the first place, in constructing our verandahs, construct them with the idea that they are in touch with our principal living room, whether that is your library or dining room, or whether it is a sort of half withdrawing room. A wide verandah, a verandah you can get a large amount of side light, then you can have a bench along the side of that, and you would be surprised—I have tried it for myself—what a quantity and what a richness and what a fulness of bloom is possible. Now, you know that in so many of our homes now, instead of the old wood stove or the old base burner coal

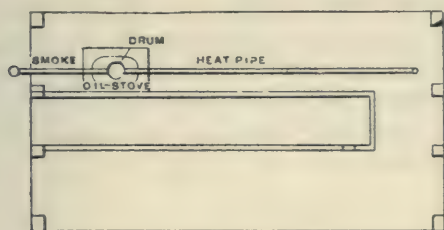
stove, we have our furnaces in the cellar. You say, 'Well, what are you going to do with hot air?' You can do something with hot air, but not so much as with hot water; and there is no furnace, whether for wood or coal, in which you cannot put a little coil and carry that into the small conservatory and give it a generous, even heat which will give you beautiful flowers. You try to grow a certain class of flowers or roses, say carnations or violets, in an ordinary room, you can't do it satisfactorily. Your roses will be overcome and devastated with the aphids, and your carnations will fail to open up in their beauty, and the violets will religiously refuse to bloom satisfactorily and give their fragrance. Why? Because the temperature in the ordinary room is up and down, up and down, and that is inimical to plant prosperity. They don't like any better than we do the see-saw of life, and they don't prosper on it any better than we do. It is irritating and they resent it at once. Another form of conservatory, which is more desirable and cheap—remember, I am not talking about one that is the most desirable and expensive, nor one that with its span and with its arched glass roof is one of the luxuries which are only available to the rich—but I am speaking of that which is avail-



able to those of smaller means; that is, to build on the side of the house a lean-to conservatory; and I have one in my mind's eye now, 12 feet long, $8\frac{3}{4}$ feet wide, with 100 plants that are doing sterling duty the whole year round and supplying the house with a

profusion of bouquets. That is a small house, but you can have it anywhere 10, 12, 14 feet wide, and whatever length you want; but by giving a top glass to it you have plants which grow straight up. It is just the ideal thing for your carnations. They open up beautifully without that crack on the side which is so apt to be with side light where they turn their faces. Having the top light you bring your plants nearly to the glass so as not to meet so much of the refractive rays, causing your plants to be healthier and sturdier in growth, and the flowers themselves to be richer in tint and sweeter in odor. Carry out the same idea again in regard to heating. If you don't put in a heater by itself, carry from your house furnace a coil and you can run your hot water underneath your plant shelves, or you can run it above it, or run each pipe along the glass. The advantage they claim for the latter place is that the air that comes chilled from the glass becomes heated before it falls on the flowers. Either take in a verandah and make a conservatory of it or build a lean-to and make a conservatory of it. You can take the latter and make \$100 build your concern, put in your heating apparatus if you have not already a furnace in your cellar, and stock it with a fair variety of plants, which you could not grow in your living rooms to advantage. Last year I saw a little conservatory of that sort 9.6 ft. wide, 24 feet long, with 500 plants, with bouquets of roses and carnations, geraniums, fuschias and a large number of the other plants, supplying not only the household but a church on Sabbath day with bouquets, and furnishing flowers for nearly all the sick families within the radius of some three or four miles, and I am positive that that did not cost \$80 in its whole outfit. It was built and heated by itself, which is the better way, because then you can regulate it. One of the old "Giant" stoves was taken, and in the top of it there were five coils of inch pipe, and then

that pipe was carried with ten coils under the bench, six coils on the back wall, and the whole of that plumbing was as follows: The cost of the stove was \$6; the mason was paid \$3.50 for bricking it in—the mason found the brick; and the plumbing cost \$22; the owner being a handy man built the walls himself, bought the material at the sash factory and had a carpenter two days to get the thing closed; and with that small cost he



had all that beauty for himself and others. Don't attempt to put everything you can read of in the books into your conservatory; nor to put all that you read of in books into practice. Go slow. Feel your way. We are always safe in starting with geraniums. The geranium is one of God's greatest blessings in the flower line to humanity, because it will stand almost any treatment and show a smiling face. There are some plants that are just as pernickety as pernickety can be, but you must understand their pernickety-ness or you won't get the pleasure from them. You who love horses don't want a horse that goes like a tame sheep, but you want one that makes you feel the ribbons, and that is a thing of life, and you control it. That horse steps out and you feel that you can pass John A. Thompson as you go down the street. Flowers need to be handled in the same way. It is said that roses would be as sweet under any other name. I don't know; I never saw roses under any other name, but you know they are sweet and desirable. The plant that would be more

amenable next to the geranium probably is the carnation; but those of you who are lovers of flowers know that what we called carnations when we were boys would not pass as flowers to-day. Look at those carnations, great beauties splashed white and rose, yellow, mauve, almost all the shades of color, and so sweet and so fragrant, and they can be grown in a little conservatory, so that a couple of dozen roots will give you carnations galore. Then next to that, in a small conservatory it is desirable to have that which is ornamental. Then you come to the palms. Keep to the Kentias, they will give satisfaction. There are certain plants which have somewhat been neglected in the greater majority of families, and this is the begonia family—beautiful plants that require little attention and little study, and which are most desirable and full of beauty. They would be almost sufficient for any amateur to start with and would give him satisfaction. Where there are apples and music there should be flowers. You know there are birds in so many homes, and what a dirty thing that sweet little canary is, and how often you have to take the dust-pan to gather up those broken seeds; but you could have fish—a small aquarium fitted with some of those Mediterranean carp known as gold fish, or even some of our own minnows or shiners or red roach or the beautiful sun-fish. A few of those in an aquarium, with a certain amount of plant life, so as to balance your animal life with your botanical life; the water should not require changing any oftener than two or three months, and you may feed them a little German feed once a day, and you have got a thing of beauty and a joy forever. Their sinuous and graceful movements are a charm, and you can sit and watch them with pleasure, and they are ever so much more cleanly to look after than Dicky is."

WATERING HOUSE PLANTS.

I AM satisfied that not one person in twenty is aware that too much water is more dangerous to the plants than too little. Some gardeners seem to have the idea that to take a watering pot in hand to supply the needs of plants is an easy duty, and that to give a dash here and to soak the soil there is all there is to the matter. One thing is to be observed: All plants under all circumstances, nor, indeed, the same plants under different circumstances require the same amount of water. It is necessary, therefore to study the nature and habits of kinds so that each may be treated according to its needs. A vigorous blooming plant, say a fuchsia or ger-

anium, might be said to represent the maximum need of water; the same when in a state of rest, in cool, damp weather, the minimum requirement as to this. Therefore to give exactly the same quantity of water in both conditions named, would be to cause harm by not giving enough water to some and too much to others. One safe rule is to wait until the ball of earth begins to get rather dry, and then to give enough water to moisten the soil through and through. Then do not water again until the former state of dryness is reached, be that time six hours or six days.—*Vick's Magazine*.

LOBELIA CARDINALIS.

THE LOBELIA CARDINALIS, or Cardinal Flower, is the most showy of our native plants. Its rich, cardinal-red shade is extremely rare in flowers; in fact, we can recall no other wild flower of the same gorgeous hue. Though growing naturally in rather wet spots, it takes kindly to cultivation and will grow and blossom very satisfactorily in almost any location, particularly if it is where a dash of water can be given it once in a while. It begins to blossom in July, and the long spikes of brilliant flowers will continue opening to the very tip, lasting until the latter part of August.

Numerous side shoots spring out from the main stalk and lengthen the time of flowering, and these little sprays mixed with some fern fronds are lovely for table decoration.

The plant can be raised successfully from seed, but will not bloom until the second year. With us, while not common, it is sufficiently plenty that roots can always be obtained if you know where to go for them. I have found that after the seeds have ripened the flower stalk withers and in the fall a new growth starts, forming a little green rosette of leaves, and this is the best time for transplanting.

This summer I found a plant with pure pink blossoms growing in the midst of hundreds of the typical colored flowers. I thought it a rare find, as I had never seen or heard of any such before. Later I found that one of the same color was growing in a bed of seedlings at Highland Park.—*Vick's Magazine*.

THE SAN JOSE SCALE IN GEORGIA.—A press dispatch from Atlanta, dated Dec. 30th, says: Thirty thousand fruit trees, comprising the entire orchards of D. C. and G. W. Bacon, in Mitchell County, will be burned by order of State Entomologist Scott, owing to the ravages of San Jose Scale.

In the immediate neighborhood of Dewitt, in the counties of Inerwein, Berrien, Worth and Mitchell, are more than 300,000 bearing peach trees, and in justice to the owners of neighboring orchards, as well as to perform a service for the state, the trees will be destroyed. The work will require several week's time.



The Canadian Horticulturist

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE YORK IMPERIAL is highly commended by H. E. Van Deman as a commercial apple. He advises Ben Davis as most profitable for Colorado, and York Imperial as second.

A GLORIA MUNDI APPLE was recently shown at the Indiana State Fair in 1899, weighing 23¼ ounces, and measuring 16 inches in circumference. This is claimed to be the largest apple in the world.

GOOSEBERRY MILDEW is very resistant to fungicides, and so far satisfactory results from treatment have not been obtained. Close, of Geneva, has been trying Bordeaux, lysol, formalin and potassium sulphide, and in each case the latter substance has given the best results. The Bordeaux mixture seemed comparatively valueless, though very early applications gave some favorable results.

CRUDE PETROLEUM has been tried with considerable success in the state of Pennsylvania as a remedy for the San Jose Scale. If this substance is effective, it is much cheaper than whale oil soap, and might perhaps be purchased in large lots for fruit growers' use in spraying their orchards, at wholesale rates. At the Petrolia mills crude oil has been quoted as low as \$1.65 per barrel.

John B. Smith, of the New Jersey experiment station, has also given two seasons' trial to this substance and gives the result in Bulletin 138. He says that a thorough application of this crude petroleum to dormant trees completely destroys the Scale without perceptible injury to the trees themselves. He has tried it on all varieties of orchard fruits except cherries, and upon some bush fruits, such as currants, gooseberry and raspberry bushes, with good results in killing the Scale, while the greasy brown coating of the bark which results and

remains for several months, pretty effectually repels fresh infection. If our infested orchards can be so effectually treated as Prof. Smith seems to have demonstrated, it is evidently useless any longer to continue the wholesale destruction of valuable orchards which are only slightly affected with this pest.

EXPORT OF RASPBERRY PULP.—Some of our readers are anxiously asking to know the results of our export shipments of raspberry pulp. The following enclosure from Mr. Harrison, Watson, is written by a firm which had been testing Raspberry for use in making essences, is not encouraging :

As to the Fruit Pulp, I am sorry to say that our experiences with it has been a failure. In making fruit essences, we find it necessary to develop a small amount of fermentation under carefully guarded conditions, and this properly done, the flavor and aroma of such fruit as raspberries is fully double.

The raspberry pulp, as prepared by you, is not susceptible to this change. In the letters of one of our correspondents, it is mentioned that the fruit was slightly evaporated before being sterilized in the tin cases. If this be so, it may be sufficient to account for its uselessness to us.

It may be that the natural ferment present in fresh fruit is destroyed in sterilizing, but I do not think this is the case, as the fermentive germs are sufficiently present in the atmosphere to excite change under proper conditions.

We will, however, make some experiments to determine this point when we buy our next year's supply of fruit but at present the want of flavor, aroma and color, in the canned raspberries makes them useless for our purpose.

KEEPING APPLES.—The winter 1899-1900 will long be remembered among fruit men for the early decay of apples stored for winter sale. Something in the season has caused a lack of that firmness and keeping quality usual with our best winter varieties. External conditions, however, count much more in the keeping of of fruit than is usually supposed; cold and moderately moist air being most favorable. Gregory, the noted Seedsman, relates his experience as follows :

I noted that two of your correspondents, in their advice as to the best way for keeping apples, advised that the cellar should be a dry one. Here in eastern Massachusetts we don't think that way, but would prefer a damp, cool cellar, especially with the russet varieties, which are in-

clined to shrivel in a dry cellar. About 50 years ago, when a young college graduate, I was teaching a country academy in Massachusetts. At apple-picking time, one of my schoolboys brought me a Roxbury Russet from his father's cellar, in sound condition, that had been picked the previous year. The next day he brought me another that had been picked two years before. This also was sound, but it looked and tasted much as a cellar smells. I investigated, and learned that the apples had been kept in the house cellar, in barrels and bags thrown in on them, and that the cellar differed from ordinary cellars in being quite damp, which would be inferred from the fact that a stream of water flowed parallel with one end of the house and within six feet of it.

PACKING INFERIOR APPLES.—It is only fair to our many fruit growers throughout the Province to defend them from the blame manifestly laid upon them for shipping fraudulent packages of fruit. This filling barrels with cider apples and facing with No. 1 apples is not done by our fruit growers, but by speculators who buy orchards and ship, often under an assumed name, everything in the orchard. Here is one example, taken from the last November crop report :

Kincardine, Bruce: A great many of the farmers sold their orchards by lump and lost heavily by doing so. One man sold his for \$75, and they packed or filled about 300 barrels. Another sold his for \$25, and there were over 200 barrels, and so on. The packers had to pull the apples, and the consequence was that many inferior apples were packed, so that I fear it will hurt our market in the Old Land for another year. There ought to be something done to prevent them from sending inferior apples to the Old Country.

We hope the provisions asked for by our association will prove effectual in barring the continuance of this evil.

THE FORTY-FIFTH ANNIVERSARY of the Western New York Horticulturist Society was announced for Jan. 24th and 25th, 1900. Our President is the delegate from our Society, and we hope he may bring us back much valuable information. Among the subjects we note Fertilizers for Orchards, by Prof. S. P. Maynard, of Massachusetts; the Small Fruit Package Law, by M. D. Barnes; Soiling Crops as related, and Fruit Culture, by Prof. H. E. Van Dewsén; Comfort and Plenty, by Prof. J. P. Roberts, Cornell University, etc., etc.

Our Affiliated Societies.

GRIMSBY.—At our annual meeting, after the election of officers, it was decided to hold monthly meetings, beginning the first Saturday evening in February, from 7.30 to 9.30. The committee will either secure a lecture, a paper from some member as the principal feature of the evening, to be followed by questions and discussion, or will provide a topic, as for example the Dahlia or the Palm, and ask each member to bring a reading on the topic, not to exceed three minutes, except perhaps in the case of the opening reading. The evening will, of course, be brightened by musical contributions. In this way much valuable information will be gained by every member in the course of a few years, and the effect must become noticeable in the flower gardens of the community.

PORT HOPE.—The annual meeting of the Horticultural Society was held in the council chamber on Wednesday, Jan. 10th, to receive the Secretary and Treasurer's report and elect directors for the year 1900. The Treasurer's report for 1899 was read showing an expenditure of \$215, from which each member received a monthly magazine, bulbs, plants, etc., leaving a balance of sixty dollars for the current year.

H. H. Burnham was elected president and A. W. Pringle, secretary-treasurer.

WOODSTOCK.—The exhibit held recently by our Horticultural Society may be considered a fairly successful one, both in a financial way and in the larger attendance of the public generally. Although this be so our members must not rest content, considering that the acme of perfection has been arrived at, nor must they be misled by the kind words of approval with which their efforts were received. In making some comments on the Show the writer hopes that her remarks will not be taken as unkind criticism, but in the belief that the consideration of any points which may be raised will lead to discussion which shall ultimately result in benefit to our members. The arrangements were, on the whole, satisfactory, and showed the plants to good advantage, but, regarding the plants themselves, few of them, from a florist's standpoint at least, could be considered specimen or exhibition plants. Among those which might be mentioned as coming nearest to this standard may be named a *Latania Borbonica* Palm, a *Phoenix Reclinata* Palm, a flowering *Begonia*, a *Musa Ensete* and a *Strep-sophelon Jamesoni*, and of these possibly the first named palm was the best, being of a fair size and having perfect leaves. The majority of the plants exhibited were of such a character as looked well when massed, but individually would not look so well. The question then arises, can these plants be properly grown without the aid of glass? The answer would be that to a certain extent they can, but to be really successful with a large number the aid of glass is requisite. However, may it not also be asked do not amateurs endeavor to

grow too many plants and thus, by overcrowding, render it quite impossible to succeed as might be done by having fewer and consequently better grown plants? In certain classes of plants—the *Geranium* for instance—there seems to be a tendency to grow a very limited number of varieties, principally of the *Bruant* and *Souvenir de Mirande* type; the former of which, from their thicker leaves and semi-double flowers, stand the sun and rain better than the single and more double varieties. It seems a pity that this should be so for among some of the newer doubles and round-flowered English varieties, many of which carry flowers of over two inches in diameter and in large trusses, are to be found some which would be a perfect revelation of beauty to those who have not already seen them, and which make charming pot plants. Another matter to which our attention might with advantage be directed is that at our Shows, by the members at any rate, plants should have labels showing the name of the species to which they belong, and if the species be sub-divided into varieties, the name of the variety should be shown. Take for instance such a well-know plant as the *Fuchsia*, a visitor might be struck with the beauty of some particularly pretty variety and have a desire to possess a similar one. In this case if the name, Mrs. Marshall, Mrs. E. G. Hill, Phenomenal or whatever name by which the plant be known in commerce, be attached to it, the desire would be easily gratified.

Passing on to the cut flowers may we not ask why, in so large a Society as ours, together with contributions from others not members, as well, was the display so small and confined to so few classes? In order to bring out the facts as clearly as possible, let me as briefly as possible enumerate, as far as recollection will serve, the flowers shown: *Gladioli*, 2 exhibits; *Asters*, 2 or 3; *Can-nas*, 1; *Phlox Drummondii*, 1; *Sweet Peas*, 1; *Stocks*, 1; a small collection of roses and two or three bouquets. Some of these, however, were very nice and nicely shown, notably the *Phloxes* which were shown in separate colors, this being a very desirable feature where it is at all practicable, because some shades of color in themselves beautiful do not harmonize well when shown together. The same to a certain extent might be said of the fruit, that is, that while good there was too little of it to make a proper showing. Might it not be suggested that our members, as far as possible, take up some special class or variety of plant, as has been done to each, and by devoting their attention more in the one channel secure greater perfection.

It is on these lines that the noted specialists in Europe (and may I mention our own Mr. Groff in *Gladioli*), have made world-wide reputations for themselves, and while we cannot hope even to emulate them yet there is more satisfaction in attempting little and doing that little well than by attempting too much, and by so doing fail even in pleasing ourselves. These remarks should not be brought to a close without referring to the regret

we must all feel in the small support we receive from our professional friends whom we would naturally expect be the leaders in these matters, the more particularly so from the fact that while there may be some trouble and no money in it, yet these exhibitions must tend much to foster a love for flowers which should ultimately be to their benefit and add greatly to our pleasure.

W., before Woodstock Society.

HAMILTON.—There was a fair attendance of members at the third annual meeting of the Hamilton Horticultural Society last evening in the Hamilton Association's room. President A. Alexander occupied the chair. J. M. Dickson, secretary, presented a satisfactory report of the society's work for the year. There were held ten general meetings and ten director's meetings. Six papers were read and several addresses delivered on horticultural topics. Two exhibitions were held, in June and November. At the first the expenses were \$115.76, and the receipts \$21.05, a loss of \$94.71; at the second the expenditures were \$84.55, and the receipts \$36.45, a total loss of \$142.81. Two distributions of premiums were made, one by the Ontario Fruit Grower's Association and the other by the Society.

The finances of the year were: Receipts, \$670.53; expenditures, \$528.60; balance in hand, \$141.93. There were 148 paid-up members on the books.

On motion of President Alexander, seconded by Frederick H. Lamb, the report was adopted.

The election of officers resulted in the election of A. Alexander, president, and J. M. Dickson, secretary.

The question of the composition of the board of parks commissioners was brought up by the president. Mr. Alexander said the Society had, at least, an interest in the selection of the board. The commissioners would have absolute power and the greatest care should be taken in their choice. They should be free from political bias and mercenary aims, and should have a natural taste for the beautiful and leisure to devote to the work of the board. He thought the society ought to recommend one or two names of men it thought qualified to act as commissioners. He could see there would be great difficulty in the aldermen agreeing on the six required from the large number nominated by the mayor.

Mr. Cauley was of opinion that the Society should assist in picking out the most competent men for the positions. He suggested Mr. Alexander and Mr. Kilvington.

Frederick H. Lamb thought it would be injudicious to name anyone.

F. B. Greening favored going through the list of nominations and suggesting six as the society's choice.

Robert Wilson was of the opinion it would be injudicious to mention names. A resolution asking that care be taken in the selection was all that ought to be sent to those who would make the choice.

Mr. Greening said he could not see how the council could take umbrage at the society making suggestions any more than against the Improvement society for its suggestions.

Finally, on motion of S. Aylett, seconded by F. B. Greening, it was resolved that a deputation from the society place twelve names of worthy men before Mayor Teetzel, with the suggestion that from them be chosen the required six. The officers and directors were appointed to make the selection of the twelve.

At the close of the business meeting the officers and directors met, and after unanimously re-electing J. M. Dickson secretary-treasurer, proceeded to pick the selection from the mayor's battalion of nominations. They proved to be these:

A. Alexander.
Frederick H. Lamb.
B. E. Charlton.
John Knox.
F. W. Fearman.
John A. Bruce.
J. G. Bowes.
J. J. Evel.
H. P. Coburn.
C. D. Dexter.
George Rutherford.
J. G. Y. Burkholder.

Rev. A. McLaren, J. Kneeshaw and Secretary Dickson were appointed the deputation to lay before the mayor the names selected on behalf of the society.

LONDON.—The inaugural meeting of the London Horticultural Society took place last night in the lecture room of the Y. M. C. A. The meeting was well attended and the proceedings were throughout of the most enthusiastic and harmonious nature. The new society enters upon its career under the most favorable circumstances, having already secured over 100 members.

The meeting opened about 8 o'clock with Mr. J. A. Balkwill in the chair, and Mr. W. E. Saunders acting as secretary. The first business was the election of officers, but before it was proceeded with Rev. Dr. Bethune was asked to favor the meeting with some facts as to the formation and advantages of horticultural societies, he having been a member of the horticultural society at Port Hope during his residence there. Dr. Bethune responded and threw considerable light on the subject. A number of new members were enrolled, and the election of officers was then proceeded with, resulting in the election of J. A. Balkwill, president, and R. W. Rennie, secretary.

The adoption of by-laws was then proceeded with, this order of business being greatly expedited by the fact that the act under which the society is formed provides certain by-laws that must be adopted. Considerable discussion was evoked by the fact that there already existed the District of London Horticultural and Agricultural Society, and it was feared that confusion would arise in the names. The president explained that the name of the society had been fixed by the government and that the other society would amend its name so as to avoid confusion. The object of the society, as set forth in the by-laws, is the encouragement of horticulture. Four public meetings must be held every year, at which flowers, plants, fruits, etc., may be exhibited by members and the public. Members of the Society are entitled to membership in the Fruit Grower's

Association of Ontario, and to participate in its advantages. The surplus profits of the society are applied to the procuring of bulbs, seeds, plants, etc., which are distributed free to members.

The first meeting of the directors will be called shortly by postcard, and they will decide on the dates for the four regular meetings of the year. Special meetings will also be held from time to time for the hearing of lectures from government lecturers and horticultural experts.—*London Advertiser*.

TORONTO JUNCTION.—The Toronto Junction Horticultural Society is the name of a new organization that promises to be of great usefulness.

The organization meeting was held in the council chamber of the Town Hall on Wednesday evening with a fair attendance.

Mr. A. Gilchrist, who had been authorized by the Deputy Minister of Agriculture to organize the society, called the meeting to order and presided until the work of organization was completed.

At the election of officers Mr. A. Gilchrist was elected hon. president and Mr. F. C. Colbeck, president.

In accepting office, President Colbeck expressed his thanks for the honor conferred upon him and referred to the importance of the work in which the society was to engage and promised to use his best endeavors to make the organization a useful one.

Mr. Gilchrist, after expressing his thanks for the society's mark of appreciation in electing him honorary president, referred to the very useful work the society could do in a young town like the Junction. He had thought of taking steps towards organizing it several years ago, but had been deterred by the then shifting character of the population. Now that there was a more permanent population he thought a great work could be done by such an organization, and he mentioned some of the ways in which it could make its usefulness felt, such as protesting against the destruction of beautiful trees or the burning of underbrush. The good roads movement was something that should have the co-operation of the society. An effort should be made to interest the children in the beauties of nature and he advocated giving prizes to encourage them in horticultural pursuits.

A resolution was adopted in favor of affiliating with the Ontario Fruit Growers' Association.

Regular meetings of the society will be held on the fourth Tuesday of each month, and if the consent of the council be obtained the meetings will be held in the Council Chamber.

WOODSTOCK.—Mr. Scarff, our director for that district, sends us the following clipping from the *Times* of Jan 11th:

Last night the annual meeting of the Woodstock Horticultural Society was held in the council chamber, with a good attendance of members. Interest seems to be growing rapidly in the work of the society, and the reports presented by the president and secretary last night were very gratifying indeed. The year just ended has been the

most successful in the history of the local society, and they will begin the new year with increased energy, and an endeavor will be made to interest more in horticulture.

The annual report of the president, Mr. D. W. Karn, was listened to with a great deal of interest. In it he referred with pleasure to the very satisfactory condition of the society at the present time, and said that a great deal of credit was due the secretary-treasurer, Mayor Jas. S. Scarff, for the success of the same. Mr. Karn also suggested to the incoming officials that a more determined effort be made to increase the interest in the monthly meetings, and at least every three months the meeting be so organized that they could have the attendance of the ladies in connection with the work. In retiring from the position of president, Mr. Karn thanked all the members for their confidence, and complimented the society for the unprecedented report of the secretary-treasurer. Upon motion the report was carried unanimously.

The secretary-treasurer, Mayor Jas. S. Scarff, also presented his annual report. It was very gratifying to the members of the society to learn that they were in such good standing. The society was in a better financial condition for the beginning of the new year than ever before. The report read as follows,—

RECEIPTS.

Balance on hand from last year.....	\$ 70 71
Legislative grant.....	57 00
Members' subscriptions.....	99 00
Admission fees to exhibition.....	88 25
Commission from Ontario Fruit Growers' Association	19 40
	<hr/>
	\$334 36

EXPENDITURES.

Rent light of buildings and grounds, etc..	\$ 14 00
Meetings, lectures, etc.....	2 00
Periodicals.....	99 00
Purchase of seeds and plants	49 00
Working expenses.....	29 35
Printing	17 50
	<hr/>
	\$211 35

Balance on hand, \$123.01.

Messrs. D. W. Karn and G. R. Pattulo were elected to the offices of president and first vice-president, respectively, with Mr. J. S. Scarff, secretary-treasurer.

LINDSAY.—The annual meeting of the Lindsay Horticultural Society was held in the council chamber last evening, for the election of president, first vice-president, second vice-president and nine directors, receiving the annual report, etc., was well attended. The report showed an expenditure of \$182.15; balance in bank last year, \$103.57; income for the year, \$196; leaving a balance of \$117.42 to the society's credit. The president for the year 1900 is Mr. W. M. Robson. Last year this society distributed to its members \$76 worth of horticultural periodicals and about \$90 in trees and plants. This only shows some of the work of this society, which ought to recommend it to the people for their most generous support. F. J. Frampton, sec.-treas.

MITCHELL—As the result of a visit to this town by our organizer, Mr. Thos. Beall, of Lindsay, during the fall, a meeting was held in the town hall on the 10th inst. for the organization of a horticultural society. A society was duly formed with a membership of fifty-seven to start with. Following are the names of the officers elected:

A. D. Smith, M.D., president; W. Elliot, B.A., first vice-president; Mrs. W. Thomson, second vice-president, and T. H. Race, secretary-treasurer. The society is arranging for a public lecture sometime early in February.

LEAMINGTON.—The Horticultural Society's annual meeting took the form this year of a concert in the town hall last night. The president, Mr. Fraser, ably presided and before eight o'clock, the hour set, the large opera house was crowded to the doors by the most intelligent of our town's people.

Music was a leading feature of the entertainment and local talent was reinforced by Miss Huff, of Dresden, who kindly assisted. She has a very sweet and powerful soprano voice. She sang "Life's Dream is O'er," in duet with Miss Nuller, taking soprano; Miss Fuller alto. She

sang also two fine selections, and another in response to a hearty encore.

Our local prima donnas, Mrs. Manning and Miss Fuller sang beautifully. Mrs. Manning gave the appropriate piece, "Beautiful Flowers," and Miss Fuller rendered in her usual happy manner "The Highland Brigade." Mr. Edelsten, to whose push and enthusiasm the success of the function is largely due, sang with spirit the patriotic song, "Our Flag." Rev. Mr. Keith gave a fine reading. The orchestra, led by Mr. Maxon, ably accompanied by Mrs. Deming, Mr. Thorn and Mr. Ivan Russell, was of great assistance.

Miss Hanna Fuller and Miss Grace Smith also ably assisted in the accompaniments.

There were speeches more or less racy and relevant from Mayor Hughes, Messrs. Fuller, Johnson Hillborn McSween, Dr. Eede, Mr. Straubel, Mr. McKay and Mr. Lewis Wigle.

During the meeting over fifty members were enrolled, and at an after meeting the officers for 1900 were chosen: Hon. Pres., Dr. Hughes, mayor of Leamington; J. D. Fraser, pres.; J. L. Hillborn, 1st vice-pres.; E. E. Adams, 2nd vice-pres.; E. J. M. Edelsten, secretary.

Besides these there were nine directors and two auditors elected.

Our Book Table.

IRRIGATION AND DRAINAGE.—F. H. King, Professor of Agricultural Physics in the University of Wisconsin. 500 pp. Published by the Macmillan Co., New York. Price, \$1.50.

We have many books on fertilizing the soil, and a few books on applying water to the soil artificially, but these latter treat the subject from an engineering standpoint rather than the agricultural point of view. It is therefore opportune that a book of this character should be given the public by a writer who has made soil physics a life study. As the author pointedly states: "Most works on irrigation have been written from the legal or sociological standpoint or from that of the engineer rather than from the cultural phases of the subject. The effort is made here to present in a broad yet specific way the fundamental principles which underlie the methods of culture by irrigation and drainage. The aim has been to deal with those relations of water to soils and to plants which must be grasped in order to permit a rational practice of applying, removing or conserving soil moisture in crop production." The author opens with a discussion of the principles underlying the watering of land, which is irrigation, and the withdrawal of water from the land, which is drainage. These are two opposite methods of land culture, both essential, but of special utility, depending upon locality and rainfall. One of the valuable things strongly emphasized in this book is the necessity of securing a desirable physical condition of the soil in order to obtain the largest return from the land. The author has shown that good culture, which means good physical condition, may in large measure replace commercial fertilizers. In other words a good physical con-

dition of the soil is often mistaken for a "worn out" condition. The plant can only get hold of the plant food when the soil is in such condition as to hold a certain amount of moisture, air and humus. When these three agents are present the processes which attend the liberation of plant food are allowed to progress normally. He makes clear the fact that many so-called worn out soils are in reality poorly tilled soils. If no other point than this was brought out the book would have accomplished a worthy mission. In this way it is of special value to the eastern farmer. To the western farmer it is useful from the irrigation standpoint. It is well known that among the most productive lands on the continent are those lying in the arid or semi-arid regions of the west. The questions of how to conduct the water to the desired place and how to distribute it are of great importance. Bound up with these are those of economy as related to water supply and as bearing upon cost of application of water. The book, then, is divided into two parts: first, irrigation; second, drainage. In this way the principles enunciated have a wide range of application. It fills a distinct place among farm books and will undoubtedly be used freely in the college as well as the private library.

This volume makes an important addition to the Rural Science Series being edited by Professor Bailey. It is illustrated with a large number of half tone pictures and a smaller number of line drawings. While the mechanical make up is not quite equal to the preceding numbers of the series, it bears the unmistakable stamp of the Macmillans, which is usually a synonym of good book making.

J. C.

QUESTION DRAWER.

Arrangement of Home Grounds.

SIR,—I have been much interested in the articles on landscape gardening which appeared in the "Horticulturist." I intend laying out my own grounds and thought of sending you a plan of ground for any suggestions you might offer.

A gravel ridge runs across the field and down into the bush. It is about four or five rods wide and higher than the land on either side. The barn is built against it and I have marked a site for a house on it.

The gate or driveway cannot be put any further west than is marked without having a hill to climb. The house being so far from the road I don't know what to put in front of it; a lawn so long would be too big. I would like you to suggest 1st. A driveway in from the road and position and

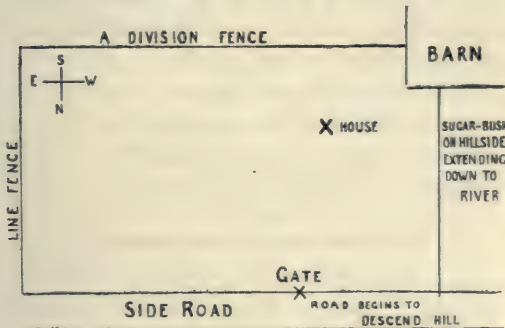


FIG. 1742.

course, whether straight or curving? 2nd. The house surroundings, the position and extent of lawn, the planting of trees and shrubs and what kinds?

The field is well protected from the west by a fine maple bush. The view from position marked for house is grand, especially to north. It is my intention to plant an orchard, having cherries and peaches on ridge, with apples towards the road. The soil is a good sandy loam, becoming more clay towards road. At present the only fixture is the barn. The field contains about seven acres. The distance from house to road is twenty rods, from house to barn about twelve.

SUBSCRIBER.

The following reply is given by W. H. Manning, Landscape Architect, Boston, Mass.:

SIR,—You ought to encourage such inquiries as you have referred to me, but in doing this you should insist upon their giving full information, otherwise no one can give them advice that will be of any real service to them.

About all I could say to your client would be

to make the general statement that it is usually unwise to locate a house on the summit of a ridge for it makes the building unduly obtrusive and roads to such a site will be more difficult to construct and maintain. It is generally better to locate at the side or at the base of a slope, reserving views from a higher level for occasional enjoyment or for enjoyment from upper windows.

A large lawn on such a place, as I take it your correspondent has in mind, would be burdensome to maintain. It would probably be better for him to enclose a smaller piece of ground with a retaining wall or irregular belt of shrubs which he would keep under the lawn mower, the adjacent land to be grazed or kept under mowing.

The roads should be made as short as practicable, and curves should not be used unless there is a very good reason for them.

Your correspondent would do well to provide a flower garden and keep all his annual flowers in it, also a service yard for laundry, etc., should be separated from the other parts of the grounds by a plantation. Plantations about the lawn should be arranged to keep as much open grass as practicable. Very few large trees should be planted near the house.

This is about all I can say to your correspondent because the information which he gives is not sufficient for one to gain a clear idea of the conditions.

Note by Editor: We very much appreciate the above pointers coming as they do from Mr. W. H. Manning, one of the best authorities in the United States on Landscape Gardening.

We understand that very soon Mr. Manning will publish a little book in which directions will be given for the preparation of Surveys of small Home and School grounds. The cost will be only 25 cents.

Another book which would be of much use to our correspondent is a hand-book for Plan-

ning and Planting Home Grounds, prepared also by Mr. W. H. Manning, and published by the Stout Manual Training School, Menomonie, Wis., price 35 cents.

The Flower Show.

SIR,—In our local Horticultural Society we are endeavoring to renew the interest this winter, and make it active for good in the community. To this end we wish to do all in our power to advance the culture of flowers, both in the town of Leamington as well as amongst the fruit growers and farmers. It is proposed we have a flower show early in the season, also at the fall fair.

Knowing, dear sir, that you have had experience along this line in your own town of Grimsby as possibly elsewhere, I should very much like a few suggestions from yourself. If you can reply at an early date I shall feel doubly grateful.

E. J. M. EDELSTEN, Leamington.

The flower show held by any affiliated society may be made a great success, and prove the source of immense encouragement to the society if properly managed. The object aimed at must be the encouragement of exhibits from amateurs, and by amateurs we mean every member of the society. We are well aware that without large money prizes in view, the professional florists will scarcely think it worth while to exhibit, and their exhibits usually formed the grand total of the old fashioned Horticultural Society's exhibits. In such cases, where was the amateur's exhibit; where the well grown begonias or geraniums from the dining room windows; where the coleus or fuschia, or the calla, which have been the joy and the ornament of the home? Certainly not at the exhibition, for each one will say, "I have nothing good enough to win a prize." The way to succeed is to interest all these people, even the person who has but one solitary plant. To do this, the directors must appoint a committee on exhibits who will visit the homes of the members and take a list of the pot plants they consider suitable, providing also labels for the name of the owner. Then on the day before the show, the directors should send out a man to collect the plants and bring them to the hall, where a floral committee will arrange them; and engage the same man to return the plants after the exhibition. This will cost some money, but it will pay

big returns every time, for each family who has a pet plant at the show will be fully represented among the visitors, and bring their friends along with them. The result will be an abundance of plants on exhibition, an abundance of visitors, and if a small fee of ten cents is charged all who are not members, the receipts will far over run all the expenses.

For the best results from an educative standpoint we would advise that a competent florist be always invited to attend, and be paid for his time, who would give information to all questioners regarding the correct names of the various plants, and the best care and treatment of them. In small towns or villages we would only have the show open one evening, possibly admitting the schools from 4 to 6 p. m., and the general public from 7 to 10 p. m., and providing some orchestral music to enliven the occasion.

It is by no means necessary to confine the exhibits to flowers; for vegetables and fruit are quite as much in place among horticultural products as the flowers.

Profitable Apples for Lambton.

SIR,—I am thinking of planting an orchard on Lake Huron near Forest, Ont., and as you have been referred to me as good authority to consult as to variety most adapted to that section of country, also how to plant them, distance apart, etc., I concluded to write you for particulars. Of course I prefer the most profitable apple for market as that is my intention to make as much out of the investment as possible. Would you recommend planting plums between the apples or will it pay to do so? Can I find a market for them? Would also like the names and addresses of some of the reliable nurseries in Ontario. If you will please favor me with the above information I will be very much obliged.

W. RAWLINGS.

Our correspondent need not be in the least limited in his choice of varieties of apple trees for planting in West Lambton. Providing he has suitable soil and other local conditions, he can grow any of the finer varieties he chooses. As to the most profitable apple for market no definite answer can be given. Some seasons the Northern Spy is the most profitable, when it ripens a firm flesh, a clean skin and a high color, but in other seasons, like the present, it decays too early, and is too small and irregu-

lar in size to be very profitable, unless in exceptional instances. Sometimes the Baldwin is the most profitable, when it gives a good yield of fair sized fruit, of high color, and firm enough to ship anywhere, but of late this variety has developed a bad habit of barrenness, and seldom yields a full crop. The Greening was once counted by many the most profitable commercial apple, sometimes giving immense yields of beautiful fruit. One fine old tree at Maplehurst yielded one season twenty barrels of marketable apples. Of late, this variety too has developed faults, in some cases being badly affected with apple scab, while its green color gives it a disadvantage on sale. The King sells for the highest price of any apple we grow, but unfortunately is no cropper, unless it should prove productive when set on Spy or some other stock. The Cranberry Pippin is a fine export apple when well grown, but some seasons it is warty and misshapen. The Ben Davis is a wonderful cropper in most places, and looks well on the market, but lacks quality. Ontario is fine every way, but the tree overbears, and is short lived. Ribston Pippin is also first class, but inclined to ripen too soon after coloring up, and the tree has very little vigor in Ontario. Blenheim Orange and Gravenstein are two very fine fall apples, probably the two best of their season. The fact is that the ideal winter apple for commercial purposes has yet to appear.

For particulars regarding methods of planting we refer our inquirer to Mr. Burrell's article on Fruit Culture in this number, which deals with that subject so well that we need not treat upon it here.

Sheldon Pear.

SIR,—On page 423 Horticulturist I saw a statement concerning the above named pear which I cannot fully agree with. As I live in the County of York, about twenty-five miles north of the City of Toronto, just about two miles south of the ridges, which makes the water shed of all the running streams north and south of this part of the country, we are very much exposed on all directions to the wind. We have a heavy clay soil mixed with black muck, very strong land. I have been trying to grow pears nearly thirty years and have a good many different kinds, and my Sheldons are doing equally as well as any other kind.

I have some Sheldons top grafted which are now about 25 feet high and not even a twig injured yet by our piercing winter winds and frost. I have also some younger trees got from the nurseries which are now fine thrifty trees, bearing as well as the other kinds growing beside them. The ground where the old trees are growing is not cultivated, it is completely sodded over. The only fault I find is the unevenness of the fruit.

I would advise anybody in our district to plant a few Sheldons, as they are no more difficult to grow than any other kind as far as my experience goes. The quality is very good, as stated in the Horticulturist.

Almira.

D. B. HOOVER.

We are pleased to have this opinion of Mr. Hoover's regarding the adaptability of the Sheldon pear to the County of York. Sometime ago we had some unfavorable reports concerning it from the fruit growers in York, which led to our remark that it was not quite hardy in York, which such testimony as Mr. Hoover's seems to contradict.

Sun Scald, Etc.

SIR,—Do you know anything of a preparation called Glen's Arborine to apply to fruit trees said to protect from rabbits, mice, sheep, borers, sun scald, etc. Agents are canvassing for its sale. Is it good for anything or a hoax. I have lost a great number of young apple trees from what I supposed to be sun scald, the bark dies on the south or westerly sides of the trunk of healthy trees, beginning on a small piece an inch or two in diameter, and each year enlarging until it kills or greatly damages the tree. It attacks a tree generally at the bearing age, sometimes the bark on the whole side of the trunk is killed in a season. Often the branches of old trees are affected in the same way. What is the cause and what will prevent it? I am very much discouraged by its ravages. My land is a heavy clay loam. We had nothing of it sixty years ago. Your reply through Horticulturist will much oblige.

WILLIAM A. WALLIS.

Humber P. O., Ont.

Glen's Arborine is dealt with in a separate paragraph, and need not be treated here, except than we warn our readers against paying money for new patent nostrums which, when tested, usually prove inferior to the usually accepted remedies.

Sun Scald is a very common trouble with apple trees in Canada where we have intensely hot sunshine in summer, and trunks or crotches unprotected by foliage. Probably the most common cause of the evil occurs in winter sea-

son, when the bark becomes more or less frozen by intense cold, and this is followed by a sudden change, and a hot sunshine upon the frozen bark causes ruptured cells and vital injury to the part affected. We know of no remedy, but

the evil might be prevented by protection of the crotches and upper sides of the limbs from the rays of the sun. We have found the King and the Spitzenburg especially liable to this evil

Open Letters.

Importation of Nursery Stock.

SIR,—I see by reports in late editions of your paper that nurserymen and fruit growers in your vicinity are still urging the Government to continue to prohibit the importation of nursery stock from the United States and compel nurserymen here to fumigate all home grown nursery stock before selling. These laws militate in favor of large growers of trees who do business mostly by agents, and against smaller growers whose business is mostly local, and also against the general planter who has to pay higher prices on account of said prohibition and fumigation, and judging by the names as given of those who had those meetings, they are the large growers of nursery stock and fruit growers who are inspectors and draw Government pay, and others whom they scare by stories of the terrible ravages of the San Jose Scale. I don't believe that the scale is half so bad as those inspectors would have us believe, who go about the country with their pockets full of bottled vermin, which they exhibit while in gardens and orchards where danger of spreading is greatest, and if it is such a serious pest it can be overcome by spraying the same as other scale and bugs and things.

I was glad to find that Mr. Dearness, one of the Government Commission, was of the same opinion as myself, and in the January 6th issue of *American Gardening* you will find a writer saying that he has proved that spraying with crude Petroleum will entirely destroy San Jose Scale without in the least injuring the trees.

A nurseryman who does a large business by agents can quit selling by April the first, have a large fumigation house, dig all his trees

and fumigate them all at once, and ship and deliver at the proper time.

The small grower does business differently. He depends on the farmers and fruit growers in his vicinity to come in and get what they want. When spring opens they are very busy, and when they call for trees they are in a hurry and rather than wait to have their stock fumigated they will go home without it and not likely return, so we have in such cases to lose the sale or break the law. When a man has a certificate from a Government Inspector that his nursery is clean and has pressing bills to meet, which should he do? Laws should be framed so as to make it as easy to do right and hard to do wrong as is consistent with the public good.

I would be in favor of having competent inspectors inspect the nurseries twice a year at the owner's expense; give the clean nurseries a certificate to that effect on which they could do business without hindrance, where scale is found put a man in charge till every vestige of the same is destroyed. I also favor the importation of stock from Northern States when accompanied by certificate subject to inspection when opened here.

When the prohibition law was put in force nurserymen said prices would not be increased. But we find in some lines this year prices double what they were three years ago. The fact is there are not half enough apple trees in the country to supply the demand, and nurserymen are not slow to take advantage of the fact to raise prices when they can so easily get an advance.

Yours truly, A. W. GRAHAM.

Nurseryman and Fruit Grower, St. Thomas, Ont.



FIG. 1744. WHITE FRINGE.

On grounds of Mrs. J. Wilson, Niagara Falls. (See Garden and Lawn.)

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** MARCH **

THE CODLING MOTH.



FIG. 1745.

(Picture from Loden's "The Spraying of Plants,"
by permission of The Macmillan Co.)

NOTWITHSTANDING the formidable list of new and dreadful orchard pests, including the much talked of San Jose Scale, it is doubtful if we have any plague at the present time so alarming as the Codling Moth.

In orchards of the southern parts of Ontario, where there are two broods each year, the moth is increasing so rapidly that in un-

sprayed orchards fully one half, and often even two-thirds of the apple crop is rendered unmarketable by its ravages. Twenty years ago a very few apples would be rejected in packing on account of Codling Moth; now it threatens to destroy the whole crop of the careless orchardist.

For some years past, Mr. W. M. Orr, of Fruitland, President of the Ontario Fruit Growers' Association, has been experimenting with bands upon the trunks of the apple tree for the trapping of the Codling Moth, with marked success, and has been exhibiting at our meetings, and at the Industrial Fair, samples of these bands which had been used, and were full of larva. At Whitby a committee on Codling Moth was appointed, which has since drafted and presented before the Provincial Minister of Agriculture the following outline to serve as the basis of an Act of Parliament :

THIS ACT MAY BE CITED AS THE CODLING
MOTH LOCAL OPTION ACT.*

THE OBJECT.

1. It shall be the duty of every occupant, or, if the land be unoccupied, of the owner of such land, to place bands (as hereinafter described) upon all

bearing apple and pear trees and upon all orchard trees of bearing age within forty feet of such bearing trees (here might be embodied the age of tree or bearing age) for the purpose of destroying the larva of the codling moth.

THE BANDS.

2. The bands shall be made of "Burlap" or "Sacking," or such other material as may be considered suitable, and shall be not less than four or five inches in width and three thicknesses, and be securely fastened at a convenient point between the crotch and the ground.

THE DUTY OF THE OWNER OR OCCUPANT.

3. He shall remove said bands and carefully inspect and destroy all larva found therein and replace the bands, and continue the regular inspection thereof at intervals of twelve to fourteen days during the months of June, July and August, commencing on the 15th of June and ending on or about the 20th of August.

ADOPTION OF ACT.

4. The council of any municipality who may adopt the provisions of this act shall enforce the provisions thereof in the manner hereinafter described. They shall cause to be distributed to each owner or occupant of land within the municipality a copy of this act, not less than one month before the provisions of this act shall become operative. They shall also distribute to the same persons a sufficient number of blank forms of declaration to be filled in and signed by the said owner or occupant, setting forth the day upon which he performed the work and certifying that the work had been well and carefully done.

APPOINTMENT OF INSPECTORS.

5. The said council adopting the provisions of this act shall appoint an inspector or (in case of the council considering it more expedient for the efficient and economical carrying out of the provisions of this act, a division of the municipality) inspectors.

DUTY OF INSPECTOR.

6. The inspector shall at regular intervals, collect the forms of declaration and inspect the work done and, if neglect has been clearly shown, shall cause the work to be well done and the cost thereof to be levied as an extra tax upon the said property.

*NOTE.—The matter of penalties, appeals and remuneration is left by the committee to the Legislature to define. The committee would suggest that the party performing the work should state approximately on the form of declaration the number of larva destroyed at each operation for the encouragement of other municipalities who may contemplate the adoption of this act.

The Hon. John Dryden is prepared to do anything in his power to assist in the matter, and only needs further consideration of the methods advised before taking action.

Slingerland, of Cornell, in Bull. 142, says:

"We will hazard an estimate at the annual tribute which our New York apple-growers pay for the ravages of this pest. The average annual crop of apples in New York now amounts to about

5,000,000 barrels; as \$1.50 per barrel would seem a fair average valuation, the total valuation of the annual crop may be estimated at \$7,500,000. Although many New York fruit-growers are fighting this insect with modern methods, we think that the wormy apples would constitute at least one-third of the total crop. That is, New York fruit-growers yearly furnish \$2,500,000 worth of apples to feed this insect; and there must be added to this at least \$500,000 worth of pears (certainly a low estimate for New York) which the same insect renders worthless. This makes a tax of \$3,000,000 which a single insect levies and collects each year from the fruit growers of our state."

Now Ontario follows closely upon New York State in the production of apples, consequently the loss with us from codling moth would be somewhere between two and three million dollars.

For a long time it has been supposed that the egg of the codling moth was deposited in the basin of the apple, under shelter of the calyx, but Slingerland says, "During the past two years we have seen hundreds of the eggs on apples in New York orchards and have never yet seen one on or down in between



FIG. 1747.
EGG OF CODLING
MOTH AT b.

the calyx lobes. Most of the eggs we found were glued to the skin, apparently without much choice as to location, on the smooth surface of the fruit as shown in fig. 1747. The eggs have been aptly characterized as resembling a minute drop of milk adhering to the skin of the fruit. The egg is a thin scale like object, not quite so large as the head of a common pin, and is of a semi-transparent whitish color, often with a yellow tinge, which is sometimes quite pronounced. Unless one has seen the eggs they could not readily be discovered on an apple; the one on the apple in fig. 1747 was unnaturally whitened to bring it out in the reproduction."

From careful observations made by Gillette, of Iowa, and Lord, of Nebraska, it ap-

pears that in the latitude of Ontario the first eggs are not laid until a week or more after the petals have fallen, or ordinarily the last of May and the first half of June, while Goethe, of Germany, has shown that most of the eggs are laid at night.

The newly hatched apple worm is so tiny that it can be observed with difficulty, being only about $1/16$ of an inch in length and semi-transparent. It seldom enters the apple at the place where it hatched out of the egg, but crawls about till it finds the blossom end or some other partially protected part, and here it takes its first meal, which is a tiny portion of the outer surface of the fruit, and then after a few hours it begins to enter the apple. Card found many eggs upon the leaves, and the natural inference is that in such cases the young moth feeds at first upon leaf tissue. These observations all help to make it clear how it is that spraying the young fruit and the foliage with Paris green is often effective in lessening the ravages of the codling moth.

The worm sometimes leaves the fruit before it falls, and the worm emerges and seeks a suitable place to transform, either under the loose bark of the trunk or crotch of the tree, or on fences, rubbish piles, or stumps, any where, says Mr. Slingerland, except in the ground.

In regard the number of broods, Fletcher, of Ottawa, reported in 1895 "that careful observations made during ten years convince me that in this part of Canada there is only one regular brood of this insect in the year. This is, I believe, the case as far west as Toronto. In the fruit growing districts of (South) West Ontario there are two broods, the second brood being invariably the most destructive."

There are a number of insects which prey upon the codling moth, but the birds are the chief friends of the orchardists in this work, especially the downy woodpecker, blue bird, crow, blackbird, kingbird, swallow, sparrow,

wren, chick-a-dee and jay. Riley and Walsh state that "almost all the cocoons of the moth that have been constructed in the autumn at the trunks and limbs of apple trees, are gutted of their living tenants by hungry birds, long before the spring opens." "And yet," says Slingerland, "enough codling moths succeed in running the gauntlet every year, and allow it to take rank as the most destructive apple pest in nearly all parts of the world."

Trapping the worms by bands on the trunks was first practiced by Dr. Trimble in 1864, when he devised his famous hay rope band which was often renewed, and the old bands full of worms burned up (see Fig. 1745). This was

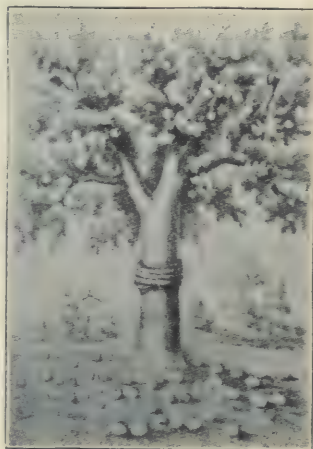


FIG. 1745. THE HAY-ROPE BAND IN OPERATION.

Reduced from Dr. Trimble's Picture

1870 and 1880, where it is said a noticeable improvement was the result.

Recently more attention is being given to bands as a means of checking the codling moth, and it has been found more convenient to use bands of sacking, as proposed by Mr. Orr, than the old fashioned hay bandages. These can easily be applied by driving a tack through the lapped ends or by tying with a cord. During July and August the bands must be examined every ten days and the cocoons destroyed, and the whole expense need not exceed four cents per tree. If as is stated, this will capture half the full grown worms each season, the result would surely be evident in a few years, especially if whole townships were to undertake con-

certed action as proposed in the report of our committee.

In addition to the trapping with bands, each grower should faithfully practise spraying with Paris green, for by this means he will destroy a large number of the worms in June before they begin their destructive work.

Slingerland says on this point :

"Facts and observations lead us to believe that in applying a poisonous spray soon after the blossoms fall, we deposit some arsenic in the calyx-cavity where nature kindly takes care of it for us until ten days or two weeks later when the little

tion must be made soon after the blossoms fall, when the calyx is open, as shown in figure 1746. If we wait a few days until the calyx has closed it will be too late. We can conceive of no possible way in which a majority of the 15 or 20 per cent. of the worms which enter the fruit at some other point in the spring, and all of the worms of the subsequent broods, can be effectively reached with the poison spray."

Experiments made by Forbes & Lodeman go to prove that as a rule two sprayings are sufficient, one just after the petals fall and a second a week later.

With pears the spraying appears less



FIG. 1748. *Just right to spray. A pear and two apples from which the petals have recently fallen. Note that the calyx lobes are widely spread. Copied from Cornell Bulletin.*

apple-worm includes in it the menu of his first few meals. Furthermore, this poisoning of these young worms which enter the developing fruit in the spring, seems to be the only way and the only time that the insect is or can be the most successfully reached with the spray; as the worms sometimes eat through into the calyx-cavity from the outside at the base of the lobes, and as some of the poison often lodges here, possibly a few of them get enough poison to kill them at this point. Not enough of the spray can be made to stay on the surface of the fruits then or at any subsequent time to reach one in a hundred of the worms which enter elsewhere than at the blossom-end. Put in another way, the above facts mean that we can hope to reach with a poison spray only those apple worms which enter the blossom ends of the forming fruits in the spring. To do this, the applica-

effective than with apples, perhaps because it is the second brood does them the most injury, and this brood, whether on pears or apples, cannot be reached to any great extent with poison spray. Slingerland thinks that with thorough work we can often save at least 75 per cent. of the apples that would otherwise be ruined by worms, and for those which escape and from the nucleus for the second brood, there is no better plan than to trap as many as possible with the banding system.



FIG. 1749. THE APPROACH.

LANDSCAPE GARDENING—III.

ROADS and walks are not in themselves objects of beauty; they are essential to secure convenient and comfortable access to the buildings and parts of the grounds. To secure the least amount of road that will serve this purpose properly, and to so arrange it that it will not be too obtrusive, or cut up the broader open spaces too much, or destroy important natural features, and at the same time secure easy grades and graceful curves, is one of the most difficult problems the landscape architect has to deal with. It is in most cases decidedly better to have the main entrance to the house on the side away from the lawn. This is contrary to the general practice. The lawn should be the quiet, restful side of the house—the homeside—and should not have an avenue or turn, and the frequent coming and going of carriages and people between it and the house. A main approach direct to the entrance of the house must be provided, and branching off from this at some distance from the house, or often entirely independent of it, there should be a secondary approach to the kitchen yards and stable. The approaches should be as direct as practicable. When it is necessary to cross the lawn, the grad-

ing can often be so managed as to hide the road from the house, and give the lawn the appearance of being unbroken. Steeper grades than a rise of one foot in fifteen should be avoided in roads, and one foot in ten in walks. The curves should be gentle and be made with an evident reason. Unnecessary curves in roads or walks are always very suspicious. For some places a straight entrance and formal treatment is preferable to curved lines and a more natural treatment. Only such walks as are required should be provided. An approach to the house independent of the drive, and walks in the gardens and to the buildings are usually all that is necessary. A walk around the lawn is often unnecessary and unsightly; in wet weather it would not be used, and in dry weather the grass is pleasanter to walk upon. Roads should be wide enough for teams to pass each other, or they should be so narrow that it is evident they cannot pass, say ten feet. Twelve feet is deceptive, fourteen feet will do, but sixteen feet is better. Three teams could not pass in eighteen feet; in twenty-one they could. The width will depend upon the arrangement of roads, the amount of passing, and the character of the passing.



FIG. 1750. LANDSCAPE ART ON BANKS OF THE HUDSON.

A fashionable family with many friends and a visiting day, will need a road wide enough for coaches to pass. If roads and walks are thoroughly constructed in the beginning, on proper grades, and the water is kept off of them, much labor and expense will be saved later in repairs.

Grading, whether the changes in the natural surface are many or few, is an important matter, especially on those parts which are not to be planted. A graceful and natural fitting of the new surfaces to the old requires some skill. A gently undulating surface and long, gentle slopes are more natural, more pleasing, and more easily cared for than short, steep slopes. In nature, abrupt slopes with sharp angles are seldom seen in free soil which is undisturbed by heavy bodies of water. Nature's process is to gradually wear off the sharp, upper edge and fill it in at the abrupt base. The result is a curve gradually running into a reverse curve—an ogee curve as the builder would call it—and it is such a curve that should be imitated in lawn grading. A for-

mal terrace, when used, may be defined by a wall or a terrace bank. Such

a bank should be distinctly formal, with its angles sharply defined and slope flat—not a mongrel with a curved top and an angular base. Very steep and abrupt slopes are sometimes necessary. They can often be filled, and held in place, with heavy, natural boulders, and planted to imitate, so far as possible, a similar slope in nature. It is very desirable to secure a shallow turf gutter at the base of a bank sloping toward the road to prevent the water from flowing on to the gravel surface. The water can be intercepted by occasional catch basins, and carried across the road, if it is on a sidehill, or disposed of by drains.

Where a permanently vigorous and luxuriant growth of plants or a constantly fine turf is required, deep trenching or plowing and liberal fertilizing is essential. It does not follow, however, that poor or barren land cannot be covered with a pleasing growth without this thorough preparation. The luxuriant clothing of barberry, sweet-fern, wild rose, and other plants on the

sandy and gravelly soil of the exposed sea-shore and also inlands is sufficient evidence of this.

Drainage and the disposal of house wastes are important matters that must be considered in the plan of a place and provided for during construction. With a satisfactory fall and outlet (for which you will sometimes have to seek permission to go through your neighbor's land) the drainage of a wet surface is not difficult to secure. A satisfactory disposal of sewage is more difficult. A leaching cesspool is the usual vehicle, a very unsafe and in many soils unsatisfactory method. A tight cesspool periodically emptied is more expensive to maintain, but safer. There are safe but somewhat complicated methods of disposal by sub-surface, or surface irrigation, which can often be used to advantage. Of course, if there is a sewer the disposal is a simple matter.

Planting, which is so often looked upon as the principal work of the landscape architect, is, as I hope I have made evident, only one of the details—a very important one, it is true, but after all only the dress and ornament of the place.

There are many thousands of species and varieties of hardy plants in common cultivation in the north-eastern United States. Of woody plants alone there are between four and five thousand species and varieties that are offered in foreign and American nursery catalogues, three-fourths of which would probably survive ordinary winters at Boston under favorable circumstances. Many of these are interesting only to the botanist, and of no value to the landscape architect, but a knowledge of all that may be of value—a very large number—will enable him to produce results and secure effects that cannot possibly be secured by a man with a more limited knowledge. While the great variety that is available gives an opportunity to produce interesting details and a much longer season of flower and more interest-

ing winter effects, it is also a great source of danger, for it constantly offers the temptation to use too large an assortment, which will result in a mixed planting with no character or individuality, and also in the introduction of many things that are not adapted to the soil or surroundings, the failure or poor success of which will give the whole planting a shabby, patchy look. It is safer to select a few reliable vigorous varieties, having good, healthy foliage through the season—they are more apt to be natives than exotics—and let them predominate in the planting; then add to its interest, if it is in a place where it is desirable to have interesting details—that is, where it frequently comes under close observation—by using a greater variety of native, exotic, or garden forms of woody plants, or hardy perennials. A large variety in a border which is to be seen from a distance is entirely lost to the eye, or gives an undesirable, mixed, or patchy look, and adds largely to the expense. If it is made mainly of a few kinds, as we see in nature, the most effective and pleasing results can be secured. A low border plantation made up of the flowering dogwood, with a few of its red flowered variety, the panicked dogwood, clethra, and wild rose,—all natives—would give a better result than the same number of exotic varieties, or if the variety were increased many times. If it were desirable to have more interesting details, large masses of loosestrife, golden rods, asters perennial sunflowers, and the like, would give it without detracting from the effect of the woody plants.

The use of colored foliage in a lawn planted in a natural way seldom produces a pleasant result, though I should not say that it cannot be used. To a person of refined tastes a gaudy, yellow piece of furniture in a finely furnished and decorated room, the prevailing color of which is green, would be offensive. It would mar the enjoyment one

would take in a tasteful and harmonious room, for it would be impossible for him to banish this conspicuous object from his eye or his mind. But a bit of yellow ribbon or bric-a-brac in the same room could be used to draw the eye to some particular nice feature to which this bit of color would give life and vivacity. If the same good taste that is applied to the decoration of a room be applied to the grounds, the brilliantly colored garden forms would be used less than they are now in the lawns, and be confined more to the garden. If one prefers not to have the quiet restfulness of the lawn, and cannot appreciate the refined beauty of natural

shrubs with their ever varying tints of green, their graceful outlines, their wealth of flow-

Boston, Mass.

ers, their luxuriance of foliage, but prefers to make a flower and foliage garden of all his place, very gorgeous and striking combinations of color and outline can be secured with garden forms, — more striking and showy than any we ordinarily see, for there are many interesting varieties which are little known and less used. Do not understand me to disparage a garden. I think every place should have one, and that it should be made as interesting and attractive as possible, but I do not think it a good thing to spread it over the place. A brilliant garden is as attractive as a brilliant bit of autumn landscape, but an autumn tinted landscape throughout the season would soon make one long for something green to look upon.

W. H. MANNING.

(To be Continued.)

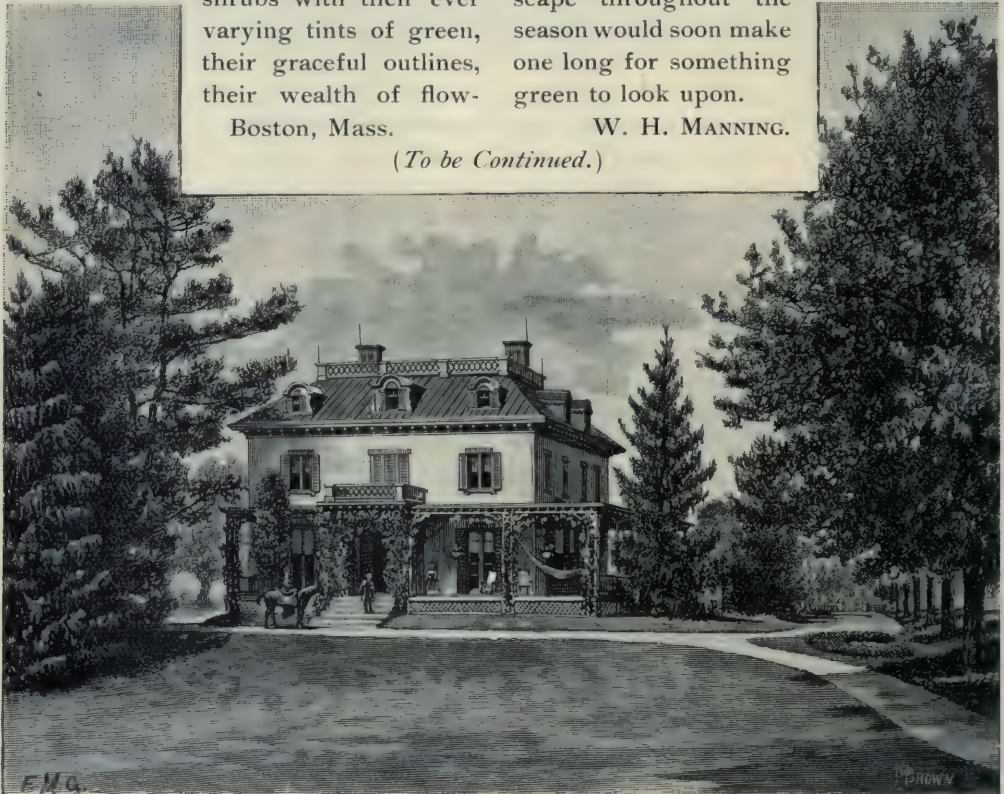


FIG. 1751 A HOME ON THE HUDSON.

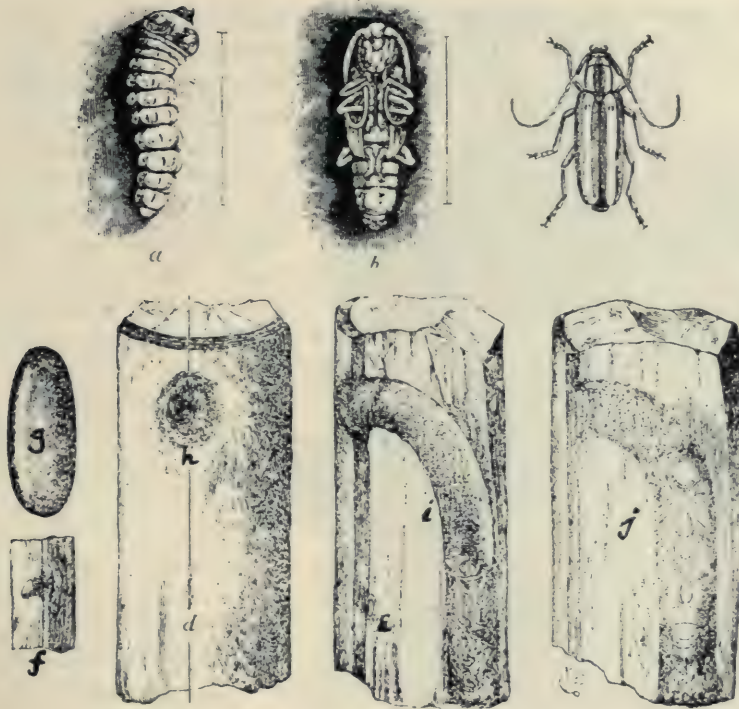


FIG. 1752. ROUND HEADED APPLE TREE BORER—*a*, larva or grub; *b*, pupa; *c*, adult beetle; *d*, puncture in which egg is laid; *e*, same in section; *f* and *g*, eggs; *h*, hole from which beetle has emerged; *i*, tunnel in wood; *j*, pupa in its cell in tunnel prior to emerging.

THE CARE OF SHADE TREES—II.

IN a previous article I dealt briefly with the physiological conditions which affect the healthy, vigorous growth of shade trees. In this present article I shall deal with the insects which work injury to these trees.

The insects which attack trees may be divided into three groups, viz., *Borers*, *Leaf-eaters*, and *Sap-suckers*. The Borers are chiefly the grubs of beetles; the Leaf-eaters are chiefly lamellicorn beetles, and the caterpillars of certain moths, and the Sap-suckers are hemipterous, or half-winged insects. A knowledge of the life-history of these injurious forms is of great service in the fight against them, and can readily be obtained by a reading of the standard works on Insects.

1. The chief Borers are the *Round-Headed* and the *Flat-Headed* Borers. The *Round-Headed Borer* (*Saperda candida*) is perhaps well known to many of the readers of this magazine, but for the benefit of those who are not yet acquainted with the pest, I shall give a few facts about its life-history and general appearance.

The beetle is about an inch in length, and has a broad, white stripe running lengthwise along each wing-cover. The general color of its upper surface is light brown. Its feelers are quite long and jointed. The grub is over an inch in length when full-grown, and has a peculiar shaped head, which is quite characteristic, rounded, and much greater in diameter than the body. The

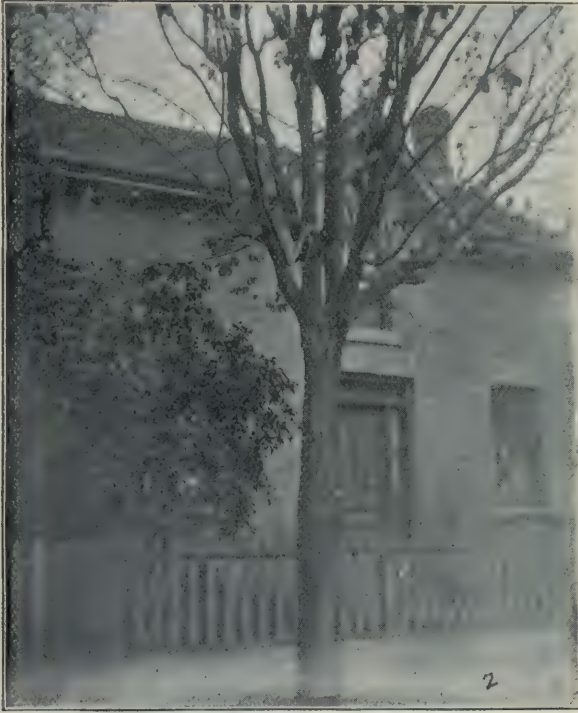


FIG. 1753. WORK OF BORERS ON MAPLE SHADE TREES.

pupal condition is seldom seen, because it does not remain a pupa for any length of time. (FIG. 1752.)

Near the end of June the beetle lays her eggs close to the ground on the trunk of the tree, under some loose bark. The young grub or larva eats its way through the bark into the sap-wood, where it remains usually a year, then it bores upwards into the hardwood, whence it emerges as a beetle after a sojourn of nearly three years. The last month prior to emergence from the tree is

spent as a pupa at the upper end of its burrow. The tunnel in the sap-wood is flat, and is usually nearly filled with sawdust castings.

The beetle emerges about the middle of June, and proceeds with all dispatch to prepare for the laying of the eggs. Figures 1753 and 1754 show very clearly the characteristic markings these beetles make upon trees. The owner of the trees tried to cut out the grubs, but this method produced the ugly, big scars which made the trees unsightly. The adoption of this method of treatment, supposes that an ugly shade tree is preferable to a dead or dying one. The best remedy is a combination of preventive and destructive measures. In the fall the trees should be carefully examined, and wherever there are indications of sawdust, the tunnels should be probed with a stout wire so as to kill the grub. Again in June the trunks of the trees should be treated with a



FIG. 1754. WORK OF BORERS ON MAPLE SHADE TREE



FIG. 1755. FLAT HEADED BORER—*a*, larva or grub; *b*, adult beetle.

mixture which will prevent the deposition of the eggs. A carbolic soap mixture, made by adding a pint of crude carbolic acid to a quart of soft

soap dissolved in two gallons of boiling water, applied with an old scrubbing brush, has been found very effective. A white-wash applied on the trunk and well up into the branches is also to be recommended.

The *Flat-Headed Borer* (*Chrysobothris femorata*) is almost as destructive as the Round-Headed Borer, and has a very similar life-history. In appearance however, it is quite different. The beetle is about half an inch long, flattened, and of a dark green, bronzy color. (Fig. 1755.) The grub or larva is light yellow in color, about an inch in length, and with a very conspicuous head, which is flat, and very broad compared with the body.

Usually it does not take so long for this insect to pass through the various stages of its life-history as is the case with the Round-Headed Borer. The period varies from one to three years, generally one year. As in the case of the Round-Headed, the beetle deposits her eggs about the end of June. The young grubs bore into the sap-wood where they tunnel out flat channels, sometimes girdling the tree. These tunnels are not so regular, and do not penetrate so far into the hardwood as do the tunnels of the Round-Headed Borer.

As a rule the eggs are deposited on the trunk a few feet from the ground.

The same remedies may be used against these pests as have been found effective with the Round-Headed Borer. Prof. Comstock advises the placing of one or two cakes of

soap in the forks of the trees, so that the rains will dissolve the soap and wash it down over the trunks.

It may be said here that these two borers are not only destructive to shade trees, but also to apple, quince, and pear trees.

There are other borers which also do much harm. The *Locust Borer* (*Cyllene robiniae*) is destructive to locusts in some localities. The beetles of these may be collected quite readily on Golden Rod in the fall. They are black with many yellow bands crossing the

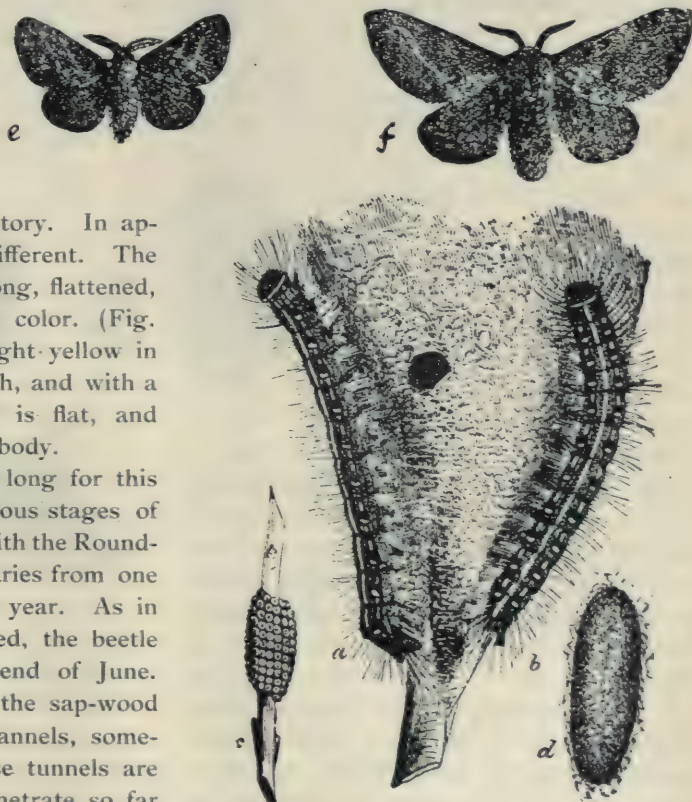


FIG. 1756. AMERICAN TENT CATERPILLAR—*a* and *b*, caterpillars on nest; *c*, egg cluster; *d*, cocoon; *e*, male moth; *f*, female moth.

wing-covers. Many locust trees can be found whose trunks are perforated by holes made by the grubs of these beetles. The holes extend through the bark into the hardwood, injuring the trees so badly that death

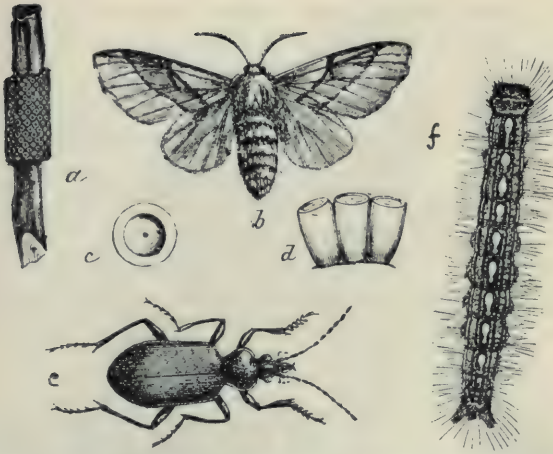


FIG. 1757. FOREST TENTLESS CATERPILLAR—*a*, egg mass; *b*, moth; *c* and *d*, eggs; *e*, fiery hunter beetle, which preys upon the eggs and caterpillars; *f*, caterpillar.

soon follows. The grubs complete their full growth in one year. Much can be done in the winter to rid the trees of these and like borers by cutting off all dead and dying branches, and burning them before the insects have a chance to escape.

Maple trees are often troubled with borers (*Plagionotus speciosus*), which are closely allied to the Locust Borer. This beetle is a very pretty creature, being marked with yellow and black stripes. The eggs are laid in summer, and the grubs bore into the wood, where they may be destroyed by a stout wire in spring.

2. The chief Leaf-Eaters which infest shade trees are the *Tent* and *Tentless caterpillars*, the *Tussock caterpillar*, the *Fall Web-worms*, and the *Bag-worms*, all of which are larvæ of moths.

The American *Tent* and the *Forest Tentless Caterpillars* (*Clisiocampa Americana* and *distria*), are doubtless familiar to most readers. The accompanying figures (Figs. 1756 and 1757) show the characteristic features of the eggmasses, larvæ, tent, and moths. Much may be done to lessen the ravages of the Tent

caterpillars by the destruction of the egg-masses in the fall, winter, and spring, and by burning the tents as soon as they appear in the spring, but there seems no practicable method of dealing with the Tentless caterpillars, which come from the woods to the orchards and lawns. These make their home primarily in the forests, where it is impossible to clear off the egg-masses.

All shade trees should be sprayed, as soon as leaves are opened, with arsenate of lead solution, made by dissolving in a wooden pail three ounces of acetate of lead in one quart of water, and in another wooden pail dissolve

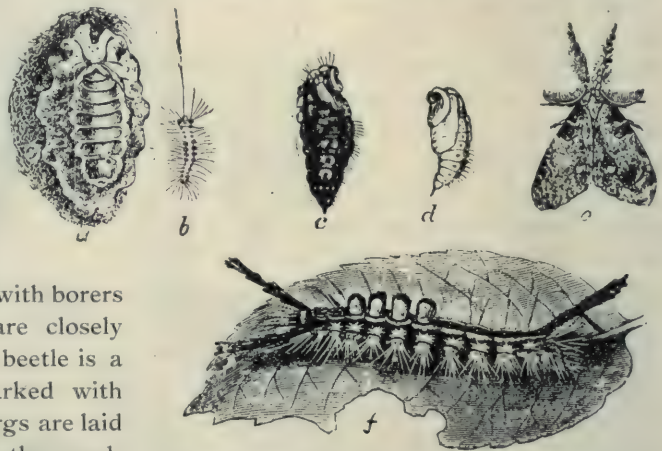


FIG. 1758. TUSOCK MOTH—*a*, wingless female on mass of eggs; *b*, caterpillar; *c*, female pupa; *d*, male pupa; *e*, male moth; *f*, full grown caterpillar.

one ounce of arsenate of soda in one pint of water; empty the contents of each of the pails into a barrel of water (40 gallons.) Stir well and add one quart of glucose. Tar bands, moreover, should be placed around the trunks, and pyrethrum powder may be used to advantage about the tree.

The *Tussock caterpillar* (*Orgyia leucostigma*) is very destructive some years, but with care the trees may be kept quite free from its ravages. (Fig. 1758.) The white, froth-like

masses of eggs, which remain over winter on the trunks and larger branches, and even on buildings and fences near by, may be scraped off and destroyed during the winter. If a few survive this treatment to show themselves as larvæ, spraying with Paris green will kill most of them. The bands of tar brushed on the trunks three or four feet from the ground will prevent the wingless female from ascending the trees to lay her eggs.



FIG. 1759. FALL WEB-WORM—*a*, caterpillar; *b*, pupa; *c*, moth.

The *Fall Web-worm* (*Hyphantria cunea*) is another serious pest of shade trees. (Fig. 1759.) The moth is either pure white, or white spotted with black, and is a very pretty creature. It lays a cluster of 300 or 400 eggs on the leaves. The caterpillars feed in colonies, and each colony spins a web wherever it feeds. When full grown, the caterpillars leave the web and crawl down the trunk to the ground to spin their cocoons, within which they pass the winter as pupæ. Several methods may be adopted to rid the trees of the pest. The collection of the cocoons, and the spraying with Paris green are both effective, but perhaps, the most effective mode of treatment is to burn the webs and the contained caterpillars. A long pole, to the end of which a swab saturated with coal-oil is fastened, makes a good torch for burning the webs.

The *Bag-worm* (*Thyridopteryx ephemeraeformis*), although rare with us on shade trees, is a pest in some cities to the south of us. During the winter silken bags, to which bits

of leaves and sticks are attached, may frequently be found on the twigs of conifers and other trees. These bags contain eggs which hatch in the spring, the little caterpillars emerging from the bags and feeding upon the leaves. They become mature, or full grown in late summer, when the bags, which they have constructed and carried about with them, are fastened securely to branches, or sometimes to fences near by. Within the bags the caterpillars change to pupæ. The male moths soon emerge, but the female moths being wingless and passive, never leave the bags, where they lay large masses of eggs.

The surest remedy for the bag-worm is to pick the bags during the winter and destroy them. If the bags are destroyed no caterpillars can make their appearance unless they come from some outside source.

3. The chief Sap-Suckers are the *Woolly Maple Bark-Louse*, or the *Cottony Maple Scale*, the *Spruce Gall Louse*, and several kinds of armored *Scale-insects*. These all have mouth-parts adapted for sucking the juices of the plants they infest.

The *Cottony Maple Scale* (*Pulvinaria innumerabilis*) is very frequently injurious to maples. (Fig. 1760.) These scales attract attention in the spring by the large cottony masses which envelope them. Within the cottony mass are the eggs, from which in a short time the young lice hatch, and spread over the branches and twigs. They soon settle on suitable spots, and begin feeding by sucking the sap. Full growth is reached about the beginning of September, when winged males appear. The females, how-

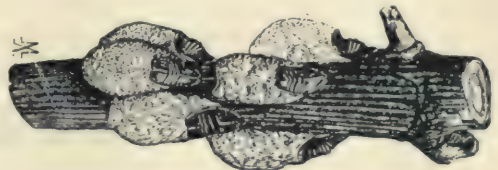


FIG. 1760. COTTONY MAPLE SCALE—Showing the insect lying on a cottony mass which contains eggs.

ever, remain under the scale all winter, and in early spring the eggs are deposited in the fluffy, cottony masses. The application of water by hose connected with the city or town waterworks has been found effective, in dislodging the eggs, and in brushing off the lice while moving about.

The *Spruce Gall Louse* (*Chermes abietis*) is undoubtedly a serious pest of the White, and other varieties of Spruce. During the last few years it has done much damage throughout the province. In early spring, about the first week of May, woolly, fluffy masses may be seen on the terminal twigs of the spruce, and if these be examined large numbers of eggs can be found. In another week the lice hatch, and settle at the bases of the young shoots, which soon show the characteristic curl. (Fig. 1761.) The base of every infested leaf becomes enlarged and gall-like. The larvae are safe from insecticides as they now live within the base of the leaf.

About August 10th, the winged female adults appear, and prepare to lay eggs for a second brood. Lice soon hatch, and spread over the limbs, but those that survive the winter seek shelter at the base of buds. The second brood of adults appear at the beginning of May, when the fluffy, woolly egg masses are seen.

If the trees are sprayed thoroughly with a mixture of soap-solution and tobacco solution

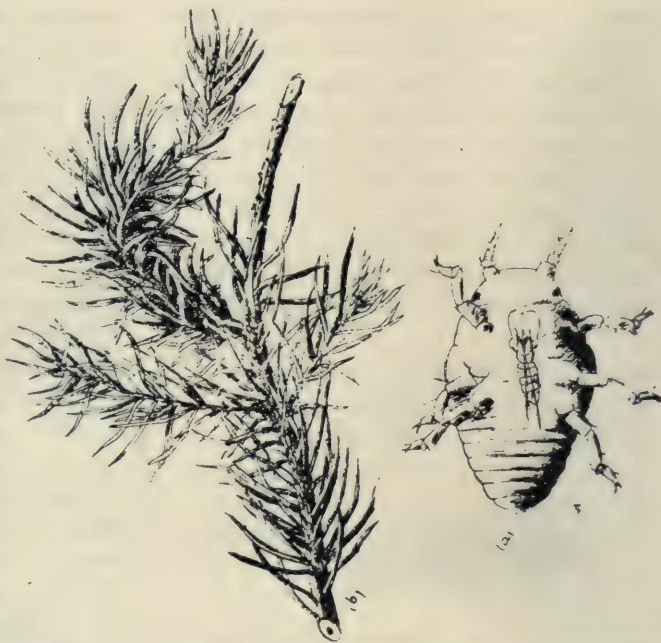


FIG. 1761. SPRUCE GALL LOUSE—*a*, summer form of nymph; *b*, a sprig of White Spruce, with one twig affected by galls produced by the young lice.

soon after the eggs are observed, most of the young lice will be killed. The operation should be repeated in August, when the second brood of lice make their appearance.

Although several armored Scales were observed on shade trees during the past season, and perhaps some damage done to the trees, yet no general complaint has been made against their work.

My next article will deal with the Fungous diseases of shade trees, and the remedies which have been found effective.

W. LOCHHEAD.

O. A. C., Guelph.

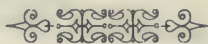




FIG. 1762. GROUP OF CONIFERS IN THE ARBORETUM AT THE CENTRAL EXPERIMENTAL FARM, OTTAWA, 1899.

CENTRAL EXPERIMENTAL FARM NOTES—No. 5.

ALTHOUGH it is now late in January there has been comparatively little severe weather so far this winter. A few days before Christmas it became very mild, and nearly all the snow disappeared, but on the 24th there was a fall of four and a half inches, which prevented us from having a green Christmas. The week beginning with December 30th and ending with January 5th was cold. On six successive days the temperature fell below zero, the lowest temperature recorded so far, being that of December 31st, when the thermometer registered 17.9 degrees fahr. below zero. There has been comparatively little snow so far, and up to the middle of the month there were not more than ten inches of snow on the ground.

PINES.

When the ornamental grounds are large, no trees are better adapted for giving character to a landscape and adding to the appearance of the buildings than pines. They

are stately and graceful; typical of strength, yet swaying and bending their branches with every breeze that blows. They are always green, and when the species are judiciously mixed or intermingled with other evergreens, the effect in winter is very fine. They afford considerable protection also, and partly on this account they are more suited for a northern exposure than anywhere else, giving a home an air of greater comfort. Pines are more difficult to transplant than many other trees, and the careless manner in which a maple or even an arbor vitæ may be handled should not be taken as an indication that all trees will survive under this harsh treatment. Pines have few fibres on their roots, and what there are are easily destroyed, for this reason the roots should be kept well protected until planted.

Pines are very varied in their form and the color of their leaves, some being also much more graceful than others. Our na-

ive White Pine (*Pinus Strobus*) is one of the best and most graceful of them all. If this were a tree from some foreign country it would probably be more planted for ornamental purposes than it is at present. The Austrian Pine beside it appears stiff and formal. The leaves, or needles as they are sometimes called, are of a lively green shade, which helps to make it one of the best appearing pines in winter. The white pine succeeds admirably in almost any kind of soil unless it be very wet, but seems to thrive best in good sandy loam. It is a rapid grower, averaging about two feet a year. Young trees ten inches high, planted in 1889, at the Central Experimental Farm, are now twenty feet in height. If good lawn specimens are desired, the trees should be planted when small, and if given plenty of room and cared for they will branch close to the ground and make beautiful trees.

Scotch Pine (*Pinus Sylvestris*). The Scotch Pine is planted more in Canada as an ornamental tree than the white pine. It is not as graceful a tree as the latter, nor its equal in any way, but it is a fine tree. It transplants easier, perhaps, than any other species of pine, and this may be one reason why it is so popular. The leaves are darker than those of the white pine, being of a bluish green color, which makes a fine contrast with those of the other species. It is a very rapid grower, and appears to succeed better on low land than the white pine, it will thrive well, however, in a great variety of soils, but it is best to plant it in well-drained soil. Trees planted in 1888, when eighteen inches high, are now nineteen feet in height.

Austrian Pine (*Pinus Austriaca*). Next to the Scotch Pine, the Austrian is probably planted more than any other pine. It is a rather stiff appearing tree, but very symmetrical, and makes a fine lawn specimen being compact, and, if good trees are planted, branching readily from near the

ground. The leaves are dark green in color and very stiff. It is a slower growing tree than either the White or Scotch pines. Trees planted in 1889 when eighteen inches high are now sixteen feet in height.

Pinus resinosa (Red Pine). The Red Pine is another native which has been used very little as an ornamental tree. At a distance, when young, it might be mistaken for an Austrian Pine, but on closer inspection



FIG. 1763. RED PINE (*Pinus resinosa*).
C. E. F., 1899.

the leaves will be found to be less rigid and softer to the touch. As the tree develops it becomes more graceful than the Austrian Pine, and is preferable in many ways. (See Fig. 1763.)

Pinus ponderosa (Bull Pine). This is a native of British Columbia, and also occurs in the Rocky Mountains in the United States. Very few specimens of this fine native tree have been planted for ornamental purposes in Canada, but where it can be grown successfully it should not be omitted. It is one of the most handsome species. The long glaucous green leaves, sometimes twisted into peculiar forms, and its upright

branches give it a majestic appearance, and make it a very noticeable and attractive object. It is a rapid grower when once established, a specimen planted in the Arboretum in 1890 when fifteen inches high, being



FIG. 1764. BULL PINE (*Pinus ponderosa*),
C. E. F., 1899.

now fourteen feet eight inches in height. It is one of the most difficult pines to transplant, as there are very few fibres on the roots. Great care should be taken to not allow the roots to become dry. The trees should not be more than eighteen inches high when planted, after which they should be well looked after. (See Fig. 1764)

Dwarf Mountain Pine (*Pinus Montana Mughus*). On account of its dwarf, compact and symmetrical habit of growth, and its generally attractive appearance, this is a very desirable pine. It is a native of the mountains of Central Europe, but succeeds admirably in this country. The foliage is very similar to that of the Scotch Pine in some respects. It is a low growing tree, never probably attaining a height of more than ten to fifteen feet. Some specimens are dwarfer than others. This is a very desirable tree.

Swiss Stone Pine (*Pinus Cembra*). This pine is a native of Central Europe and northern Russia. It is pyramidal in form, with foliage somewhat resembling that of the White Pine, but while the latter is a loose growing tree the Stone Pine is very compact, and is one of the slowest growing trees at the Experimental Farm. A specimen planted in the Arboretum in 1889 when nine inches high, is now only two feet four inches in height.

Other pines which have been tested at the Central Experimental Farm and have proven hardy so far, are *Pinus contorta* and variety *Murrayana*, natives of the Rocky Mountains and coast ranges; *P. densiflora* and *P. Thunbergii*, natives of Japan, and *P. Penke*, native of Macedonia.

The pines are all interesting, and most of them are very ornamental. They should be planted in greater variety than they are at present.

W. T. MACOUN, Horticulturist,
Central Experimental Farm, Ottawa.



WESTERN NEW YORK FRUIT GROWERS.

AS delegate of the O. F. G. Association, I attended the 45th annual meeting of W. N. Y. Horticultural Society, held in Rochester, on January 24th and 25th. This Society, notwithstanding its venerable age, is still in the full vigor of youth. The attendance at its meetings, and the interest taken in its work, is increasing from year to year.

The officers and members are an intelligent, energetic, large hearted lot of men, who not only know how to grow fruit, but to be happy themselves, and make their visitors feel at home among them. For although we live on the other side of an imaginary line, and under a different form of government it is no bar to the good fellowship and free intercourse among fruit growers, even if it does affect the fruit.

The meeting was called to order by the President, W. C. Barry, of Rochester.

No subject brought before the meeting commanded more attention than "Insect enemies of fruit," and among them San Jose Scale held first place. The alarm caused by this pest is much greater than it was at this time last year. In our country, out of 160 orchards inspected (mostly apple) 102 were found infested. One speaker said that the smallpox had been among them, and that they did not know it! We are only beginning to realize how serious the infestation is. Another speaker said "the scale has got away from us." Nursery stock from other States, with inspector's certificates attached, were found infested. It was stated that all that has been said as to the entire destruction of the scale by spraying was upset by facts. Kerosene, crude oil and soaps have all failed. Fire or fumigation with hydrocyanic acid gas are the only effectual treatment so far discovered. It is said that

some cherry and Kieffer pear trees are almost exempt from its attacks.

The State of Massachusetts has spent about one and a half million dollars fighting the Gypsy moth. Last year it spent two hundred thousand, and only succeeded in preventing its spreading to new territory. There is great danger that it may escape their vigilance and spread throughout America.

A new pest, the cherry fruit fly, has appeared; it attacks the fruit and is very destructive.

Professor Slingerland said that he could not say whether fumigation would kill the eggs of the tent and tentless caterpillar or canker-worm or not.

The disease known as "little peaches" continues to spread in some sections; burning is the only remedy known.

Black rot in grapes was bad in many vineyards last year. Scabbing of apples and pears was not so bad last year as usual.

None of the new fungicide compounds have proved so satisfactory as Bordeaux mixture, it adheres to the tree and fruit better than any other preparation used.

Apple canker continues to spread, destroying whole orchards in some sections. Pear blight has been prevalent this year, best known treatment is to cut and burn affected parts.

Duchess and Kieffer pear are said to be the most profitable. Duchess wrapped up in paper and put up in boxes by Mr. Hooker, of Rochester, brought in the British market the equal of \$14 per bbl. Professor Van Deman says that hundreds of car loads of Kieffer pears are canned and labelled Bartlett.

The Champion quince is good but too late. The Orange quince is said to be the best. The Bosc pear does well grafted on Kieffer trees.

Japan Plums.—Mr. Smith, of Geneva, says that Burbank and Wickson are the best. M. Willard says that Red June and Burbank are his favorite, and that he is more favorably impressed with Wickson than he used to be. Red June matures from the 15th to the 20th of July.

Mr. Willard says that the Windsor is the most valuable sweet cherry ever introduced in York State, being a good bearer, fruit of excellent quality, and a good shipper.

Mr. Powell endorsed what he said, and added that the tree was a strong, hardy, vigorous grower. Montmorency was pronounced the best sour cherry.

Currants.—Since the enactment of the June food law, currants have been improving in price. Now that other materials cannot be legally used in the manufacture of currant jellies and jams the prospect for paying prices for this fruit is good. President Wilder and Fay's Prolific are said to be the best red currants.

Elwanger & Barry show a new seedling pear, of excellent quality, almost equal to the Seckel; it is a winter pear, a seedling of Winter Nelis, and about the size of the St. Lawrence.

Apples.—The prospect for profitable apple growing in this State is good. When orchards are properly cultivated and fed, satisfactory results are secured. Six counties in one section of the State sold five million dollars' worth of apples last year. It is estimated that over one half of the orchards of the State are not properly cultivated or fed, and that many of these are an encumbrance on the land; it is conceded that to achieve the best results, especially in dry seasons, that there must be thorough cultivation. The Baldwin is said to be the best commercial apple grown in the State. Fraudulent packing is damaging the fruit market both at home and abroad. California apples, uniform in size, perfectly packed, arrived in perfect con-

dition, and are bringing three times as much in the best markets as home grown fruit. It was stated that the same condition prevailed in Canada, and I could not contradict it.

Professor Roberts, speaking of the conservation of moisture in the soil, says, "the farmer's cistern leaks on top; to prevent this give more and better tillage; to conserve the moisture in the soil is better than to irrigate." He says that lime, at the rate of 50 bushels to the acre on sandy land, makes it more retentive of moisture.

Professor Van Deman says that there is a greater lack of humus or vegetable matter in the soil than of potash or any other material, and that nitrogen escapes from land ploughed in the fall and left over winter without a cover crop.

The New York State Fruit Growers' Associations are very enthusiastic over the Pan American Exposition, to be held in Buffalo in 1901. They propose to have the finest exhibit of fruit ever shown in America. Committees have been appointed to carry on the work, and a special grant of ten thousand dollars is asked from the government.

The exhibit of apples, pears and grapes was remarkably fine. Among them was a plate of beautiful Princess Louise apples shown by one of our Directors, Mr. A. M. Smith, of St. Catharines.

An act has been passed in the State of New York to define the size of fruit packages. The quart basket shall be 67-1/5 cubic inches, and similarly the exact measurements of other baskets are specified. All pints, quarts, etc., not up to the legal standard, must be marked plainly with the word "short." This is a move in the right direction, for always it is found that in the end "Honesty is the best Policy."

W. M. ORR.

Fruitland.



FIG. 1765. HOME OF MR. T. H. PARKER.

FRUIT IN OXFORD COUNTY.

IT was my privilege last fall, as also the fall before, to visit the progressive town of Woodstock as judge of the fruit displayed at the agricultural exhibition there. That gave me an opportunity to compare the fruit grown in the Oxford district with that grown in the other sections of Ontario which I have from time to time visited in a similar capacity. It has long been held, and believed by many, that the Huron district surpasses all other sections of Ontario in the quantity and quality of apples it produces. I would like to uphold the supremacy of my own section in all things if I could honestly do so ; but in the matter of apple production my observation and experience will not permit me. Having had an experience extending over seven years as a judge on fruit at many of the best apple centres in the province, I am compelled by my own close observation to

give the palm to Oxford County for the finest specimens of many of our standard varieties of apples. If those exhibits which came under my observation can be considered a fair criterion of the general crop produced, Oxford County stands at the head of the many fine sections of Ontario for the quality of apples grown. The Golden Russets and Snow apples that took the prize at Woodstock in 1898 would easily have beaten any collection shown between Toronto and Port Huron. In 1899, an off year for apples, four exhibits in the Fall Pippin class at Woodstock surpassed anything of the kind that I have seen anywhere, and the Golden Russet, Snows, Talman Sweets and Baldwins, would all have carried off the prizes in their respective classes at any of the several exhibitions that I attended in other parts of the province. All the other standard varieties shown at

Woodstock last fall were quite up to the average in size and quality, and some of them, besides what I have named above, a little better than the average. The display of Alexanders, for example, was only beaten by the display at Coldwater, north of Orillia, a district supposed to be peculiarly suited for the Alexander.

Nor is Oxford behind for its quality of pears, plums and peaches, though considerably behind the Goderich district in quantity. I was surprised to find at Woodstock a few exhibits of seedling and other peaches of fine appearance and fair quality, really better than I have met with on the shore of Lake Huron, though not grown in so large a quantity.

What pleased me next to the quality and quantity of fruit exhibited at Woodstock was the interest that the people of that progressive town and vicinity manifested in it. That interest in fact might justly be termed an enthusiasm. From our director there, Mr. J. S. Scarff, and the active president of the Agricultural Society, Mr. G. R. Pattullo, to the average citizen and district farmer,—all in fact seemed to take a lively interest in the fruit exhibit, and all seemed to feel special pride in being told that it possessed special merit.

And Woodstock holds the proud distinction of producing the finest under-glass grapes in western Ontario. Mr. T. H. Parker has been a successful exhibitor of indoor grapes at the Western Fair, London, for many years, and also at Brantford, where

he meets a keener competition than at the former place. Mr. Parker grows twelve varieties of indoor grapes, among them being all the finer sorts, and every year he ships a considerable quantity to Montreal at a high price. The wisdom of growing twelve varieties of indoor grapes in this country may well be questioned, as there are not that many sorts really worth the trouble. But Mr. Parker has to have that many owing to a foolish regulation of the Western Fair Association requiring twelve varieties for a collection. No industrial association should adopt rules requiring the production of an article that is not profitable to grow.

As to the town of Woodstock itself I consider it a thing of beauty and a joy as long as you remain in it. Many of its residential streets and avenues for their leafy shade, landscape architecture and rich floral display are quite equal to the finest seen in our largest cities. In 1898 I saw cannas and caladiums in Woodstock large and more luxuriant than in Port Huron or Detroit, and such a pleasing display was not an uncommon or isolated thing. I have visited a number of Woodstocks on this continent, including the one in New England, made famous by Mr. Bowen, of the New York Independent, but among them all, for the evidences of thrift, progressive refinement, and the love of a beautiful home, there is none to compare with the Woodstock of our own beloved Ontario.

T. H. RACE.

Mitchell.

THE WICKSON PLUM was first sent out by Luther Burbank as of pure Japanese parentage; now, however, he has concluded it must be crossed with *Prunus Simoni*, and should be classed with the hybrids.

NEW SOUR CHERRIES.—Mr. F. A. Waugh, horticulturist, Burlington, Vt., gives a report on these cherries in the Twelfth Annual Report of Vermont Experimental Station. He also treats on Hybrid Plums.

PRINCE EDWARD ISLAND ENTHUSIASTIC.

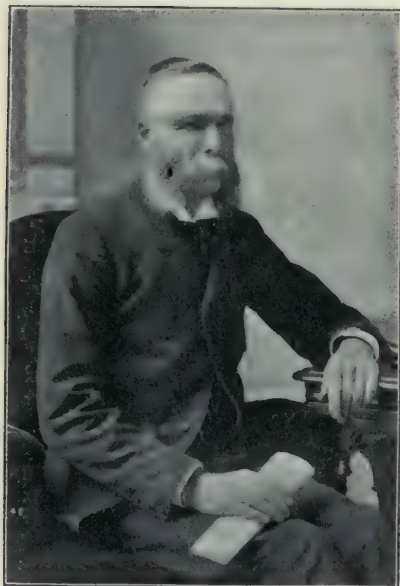


FIG. 1766. H. A. STEWART, PRES. P.E.I. ASSOCN.

EVERYWHERE horticulture at the present time is on the alert. The old associations are as strenuously exerting their influences as in the days of their inception; the new are starting out with a vigor and intelligence which promises everything for their usefulness. Nearly every province has now its well organized Fruit Growers' Association, and the valuable work they are doing to spread the principles of horticulture is before us all. Ontario, mother and mistress of all these daughter societies, has no need of blushing for her progeny.

In January the two Maritime Fruit Growers' Associations held their annual conventions. I have no brief to speak for Nova Scotia, which will be ably reported by some local pen. Our Prince Edward Island F. G. A. is in high spirits. Never since its inauguration was anything like the reception given it by the public at large as last week

when it held its meeting in Charlottetown. Not only did the best farmers and fruit raisers of the province turn out almost to a man, but the representatives of all the other walks in life, recognizing the good work she was doing, were there to do her honor and lend the assistance of their council and membership. The Governor of the Province, the Bishop of the Diocese, the Mayor of the city, the President of the Board of Trade—all vied with each other in giving her countenance—all admitted freely what she has already done for the Island and the still greater things she was to do for it in the coming years. And the Association was alive to the importance of her position, and rose to it magnificently.

The day sessions were for the transaction of business, the hearing of reports, adopting resolutions, appointing officers and committees and listening to and discussing papers. The hall was always crowded during those sessions, and even those who had never heard horticultural discussions before were at the opening and lingered until the last word was said at the closing. On one evening a grand entertainment, interspersed with five minute addresses on some subjects connected with horticulture, was held. The venture was a decided success, and reflected the greatest credit on its enterprising projectors. A large audience assembled and the best talent of the capital gladly contributed to the musical and literary numbers. The Governor himself presided. Everybody—those from the country and those from the towns—thoroughly enjoyed themselves, and the last feature, the giving away of the large fruit display, was by no means the part of the programme the least appreciated.

Prince Edward Island is now receiving nearly three-quarters of a million dollars yearly from dairying, and she only took to the industry a very few years ago. Nor is

she now to the end of her capabilities by any manner of means, she is simply commencing. The people have just only awakened to the conviction that there is money in the fruit industry for the garden province also. The apples we grow are good; there is no doubt of that. We are nearest the British market, that's patent. Our fruit coming in later than even that of Nova Scotia, we will have a great advantage in keeping qualities. All these conditions ought to help to build up a business in fruit for us that will rival Nova Scotia, two little counties of which made \$1,000,000 out of apples this year. Mr. Patrinquin, of Wolfville, N. S., was with us this year at our meeting. He is a wide-awake, practical fellow and his addresses were much appreciated. He says from his experience here and the exhibition of our fruit that there can be no doubt that Prince Edward Island ought to be turned into an apple orchard from end to end. And he thinks we can grow pears and peaches. We can grow pears, no doubt; have grown good ones even now when suitable varieties have not yet been tested; but the matter of peaches we had not thought of up to this declaration. Who knows where we may yet find ourselves in this fruit business?

At our sessions we had four good papers, which evoked much valuable discussion—one on "Pruning," one on "Commercial Orchard," one on "A Ben Davis Orchard," and one on "Medical Treatment of Plants." All were adjudged worthy of publication. It was felt that no greater necessity than pruning confronted our orchards. As to time the consensus of opinion favored doing it whenever you have "a spare moment and a sharp saw," although there was a discussion on the "winter for wood, summer for fruit theory." Prune early was another condition all admitted, and if you must cut grown trees take the branches off a foot or so from the trunk and then cut them again up close to it when the weight of a whole big limb will not

interfere with a good job. The state of the market and its demands for success were all laid down in Commercial Orchard. The Ben Davis apple for export—easily grown as it is here, resisting all the difficulties of transportation and fetching a high figure at home—was the favorite sort spoken of. A faithful account of an apple plantation of the Ben Davis variety was given in the third paper by one of our most intelligent and enterprising farmers; and, while he would not advise others to adhere to all his ways, he was able to give at best the assurance that his orchard was a grand success. The Medical Treatment of Plants pleaded for the systematic and persistent use of the spray pump in the orchard.

Perhaps the most important part of the meetings was the passing of practical opportune resolutions, all carefully considered and fully discussed. Two of those bore upon the transportation for fruit to the Old Country markets, one suggested by the F. G. A. of Ontario and another called up by local needs. The Ontario resolution, minus the recommendation as to size of apples, passed with unanimity. It has been forwarded to the Minister of Agriculture. As to grades the meeting thought we could not adhere to an absolute size scale for all kinds of apples. If the apples put on the market were branded and the contents of the barrels true to the brand, no harm was done to anybody, most thought. But deception ought to be located and punished. We asked for better facilities for shipping from here too, and for efficient inspection to see that our good name abroad should not be tarnished by rascally packing.

I don't know how you manage the business in Ontario, but it was thought that some restriction should be put on tree agents and some protection against sharpers given the public. The Local Government is asked to give legislation that will prevent the victimizing of buyers by nurserymen from within or without. As before stated, at least half

the stock planted here and imported from Ontario or New Brunswick is the veriest trash. We want to stop this imposture. The Government is also asked to secure to the Province a permanent exhibit of fruit, something that for educative purposes and purposes of identification ought long ago to have been established. And there were other resolutions of great local utility.

The appearance of a sample of Ontario Stark kindly sent me by the indefatigable Secretary of the F. G. A. of that Province, was the cynosure of all eyes. We have Starks of our own, so competent judges here and in Nova Scotia say. They are grown principally by Mr. Pigott, of Savage Harbor, but they are not at all like the Ontario Stark on exhibition. The difference of opinion on this and other apples shows us how difficult it is at times to identify some varieties in dif-

ferent provinces. I have had a little experience in this line myself this fall. Three apples were sent to three Ontario experts, and no two of them agreed as to the kinds and none of them were, in my opinion, correct in their decision. All here will watch the verification process with a consuming interest.

We have elected our President Mr. Stewart, again ; he well deserved the compliment, and about all the other officers. A good man should be held when you get him ; we have added many new members to our list and that of the superb Horticulturist ; we have awakened a new and absorbing interest in our association all around, and now we hope for a year with *omnia fausta et felicia*.

A. E. BURKE.

Alberton,

Prince Edward Island.

A NEW CHERRY PEST.—The Cherry maggot is a new and serious pest in New York. During the past season many bushels of fruit were ruined by this insect. The fly lays its egg on the skin, as the fruit begins to turn red, and from this hatches a maggot which eats its way to the pit, and is carried off when the fruit is sold. The worst thing about this disgusting pest is that it is so hard to detect its presence. Some affected fruits show a sunken place on one side, but others appear perfectly free from injury, and are sold to the consumer as sound fruit. The protest comes mostly from the buyer, after he has put the cherry in his mouth. As yet, no satisfactory remedy or preventive has been found.—*R. N. Y.*

END OF THE CENTURY NOT YET.—Dear Sir, I houp ye winna cut aff a twalmonth fra the fag end o' the cent'ry, as a lot o'

itherwise able men are tryin to dae. Shurely the warld began wi' the year 1, and the end o' the first cent'ry was jist 100 years, nae mair an' nae less. Hoo then is that 1900 sidna hae the full compliment o' nineteen hunder years? To cut aff the cent'ry at the end o' 1899 wud mean that the warld commenced in the year 0, that is a year afore it began. Noo, ye ken that a hunder times naething is simply naething, and a saxpence is worth a hunder times that, or as muckle mair as ye like. This is nae gairdenin', but I'm only writin' tae warn ye, because the loss o' a hail twalmonth's produce oot o' the gairden, and a twalmonth's waages tae ilka gairdener wud mean a michty lot. By the bye, that was a bonnie splatter at Edinbro' the ither week wi' the bubblyjock and the haggis. A'boday at the feast will noo be strong eneuch to turn ower the dew leaf we're aye hearin' about.—*Tam., in Gardeners' Chronicles.*

NOVA SCOTIA FRUIT GROWERS.

WE HAVE just received an excellent report of the annual meeting of the Nova Scotia Fruit Growers at Wolfville, beginning Jan. 29th. A prominent member of our Association, Mr. A. H. Pettit, was present and gave an address reviewing the work of our Association and making especial reference to the Grading Inspection Act. The resolution of our own committee on this important question was presented by President Bigelow and received with general approval. The Ontario apple was commended for the commercial orchard by Mr. R. W. Starr, partly on the ground of its standing in Ontario and partly on the partial test it has in Nova Scotia. Mr. Ralph S. Eaton claimed that fruit growing in Nova Scotia was too much occupied with apples, and that plums, pears, cherries and even peaches should be cultivated. He advocated the early establishment of an Agricultural College at Wolfville.

Mr. P. Innes objected to the standard barrel to be introduced by Act of Parliament of Canada on the 1st of July next, the size of which was 27 inches between heads, 17 inches diameter of head and 19 inches diameter at bilge. This barrel, he claimed, would hold 103 quarts of fruit, while the barrel adopted by the United States Apple Shippers' Convention would only hold 100 quarts. He claimed that Canada would be at a disadvantage and that the same size barrel should be adopted in Canada. He also says that the same barrel should be the standard for pears, potatoes and other products, and that the Ontario Association should be asked to co-operate in seeking such amendment.

Dr. O. E. De Witt spoke on Bills of Lading, protesting against the present contracts

which place the shipper at a disadvantage. He said,—

"The clause in the bills of lading now in use, which particularly affect the shipment of our apples is clause 1, which reads as follows: 'That they shall not be liable for loss or damage done to goods by sweating, insufficiency of package in any respect; leakage, breakage of any kind, pilferage, wastage, rottage, rain, spray, rust, fire, heat, frost, decay of any kind, contact with smell or evaporation from any other goods, or loss arising from inaccuracies in obliteration, insufficiency of or absence of marks, numbers, addresses, or description of goods shipped, or injury to wrappers however caused.' The words in this clause to which I think this association should take exception are, 'breakage of any kind, pilferage, rottage, rain, fire, spray, heat, frost, injury to wrappers.' Why should the shipper be responsible for breakage or pilferage, or damage done by rats or rain, or fire, heat or frost? If the apples arrive in the cars at the port of export in good condition and if through the carelessness or rough handling of the steamship companies, the goods are injured or damaged in any way, when loading or in transit or unloading, why should the loss be borne by the owner or consignors? Apples are rolled from the cars in Halifax on to the wharf, put into slings and carried in the slings into the hold of the ship. In London, when unloading, there are three different modes in vogue, viz.: in slings, containing from 20 to 30 barrels; by the grapple hooks; and by sliding the barrels on skids from the rail of the vessel to the wharf. The latter mode is a severe strain on the barrel and may damage a barrel that is at all weak.

"The steamship companies have control of the apples from the time they leave the cars at the wharf in Halifax until they are loaded on the consignees' vans or lighters. If the barrels are taken on board intact, if in a good sound condition, they reach the hold of the vessel. the responsibility of the shipper ought to cease. If damaged in voyage by breakage, pilferage, rottage, rain or heat, or by loading or unloading, the steamship companies should be responsible. I understand that when damage is sustained to general merchandise through the carelessness or negligence or mismanagement of the companies who carry it, they are held and made responsible for the loss.

"Why should not the product of the orchard have the same privilege? Scarcely an account of sales comes to hand but shows the sacrifice of slack, open or damaged barrels. In a few instances bad cooerage may be at fault, but it seems to me that when a barrel is found by the steamship company to be unfit for shipping it should be re-coopered at the expense of the shipper, or laid aside and the shipper notified, but not to be shipped in a damaged condition for the purpose of charging the freight. Innumerable instances have shown that when such barrels have

been sold, they have not realized enough to cover expenses. In view of the partial and unjust clause in the bill of lading referred to, I beg leave to submit the following resolution:

"Whereas the form of bill of lading now in use, and given by the Furness line of steamers to shippers of fruit by such steamships, contains as part of the terms and conditions on which the shipowners undertake the transportation of such property the following provisions:

"1st. That they shall not be liable for loss or damage done to goods by sweating, insufficiency of package in any respect, leakage, breakage of any kind, pilferage, wastage, rattage, rain, spray, rust, fire, heat, frost, decay of any kind, contact with, smell or evaporation from any other goods, or loss arising from inaccuracies in obliteration, insufficiency of or absence of marks, numbers, addresses or description of goods shipped, or injury to wrappers, however caused;

"And whereas great loss has heretofore arisen to shippers, causing their fruit to be sacrificed in the markets; and whereas great loss is likely to arise by reason of breakage, pilferage, rattage, rain, spray, heat and frost, and contact with smell or evaporation from other goods, occurring during the transportation of fruit and by injury done to barrels while loading and unloading at the docks;

"And whereas the said Furness line of steamers is in receipt of a subsidy from the government of Canada;

"Therefore, resolved that this Fruit Growers' Association, in annual session, assembled, petition the government of Canada to regulate the terms and conditions of such bills of lading so as to make the ship owners liable to the shippers of fruit for all damage done to goods by breakage, pilfer-

age, rattage, rain, heat, spray, contact with, smell and evaporation from any other goods occurring during transportation by such steamships, and by injury done to barrels while loading or unloading at the docks;

"And further resolved that a copy of these regulations be forwarded to the Honorable, the Minister of Agriculture for Canada."

LETTER FROM ENGLISH FIRM.

Dr. DeWitt presented a copy of a letter on this matter from Nothard & Lowe, of London, as follows:

"DEAR SIR,—We are continually receiving letters from shippers complaining of the loss they sustain through the low price obtained for slack, open or half-filled barrels. Shippers appear to be under the impression that we have only to make a claim on the shipping agents or owners here in London to have the matter settled, and our claims paid. We have been pushing these claims for some years past, and fought one case some years since on this very question and were beaten. While apples are shipped on this lading, containing the clauses at present existing, we are powerless to enforce claims, although we most sincerely wish we could make the steamer pay these heavy losses.

"We would suggest that the Canadian high commissioner here should be instructed by the government in Ottawa to fight a test case in London on this point, and this would solve the unsatisfactory state of things now existing. We hope you will bring your influence to bear on this matter.

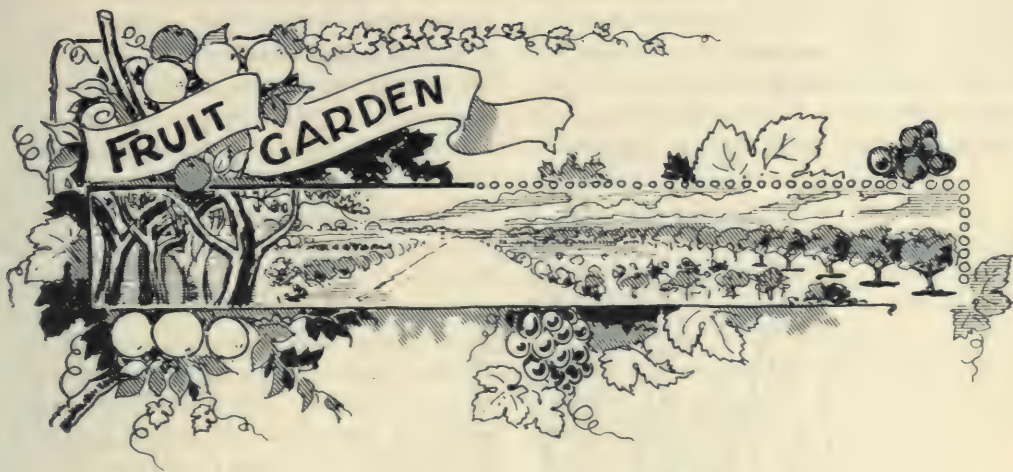
"Yours faithfully,

"NOTHARD & LOWE."

PRUNING PEARS.—Norman, in *The Garden*, says, "Pears are amenable to close pruning. Under this system they continue for many years in good health and bear regularly. * * The pyramid is by far the best for the open ground. I prune my trees to form cordonated branches—that is, they have a main stem in the centre with branches starting from it. Many trees have as many as fifty branches, some of which are twelve feet long, so that I have as it were fifty single cordon trees in one. Mostly the pruning is done in August by shortening the summer side growth to within an inch of the base. It is too common an error for spurs to be over crowded; they require room to allow the leaves to attain their fullest size, when large well-ripened bloom buds will follow.

It is better to err on the side of thinness rather than for the spurs to be crowded."

MELONS IN ITALY.—U. S. Consul Hayden, of Castellamare di Stabia, on December 12, 1899, says: "In this portion of Italy, muskmelons at best are very inferior to the American fruit, lacking the sweet flavor of our melon. Strange to say, however, this same melon when reserved for consumption in winter is very acceptable. A custom exists here of pulling the melon from the vine while green, and hanging it up in the open air until winter, when it is eaten. The melon becomes not only far superior to the ripe fruit of summer, but quite equal to the American product. If this system could be adopted in the United States, it might prove of value."



FRUIT CULTURE.—II.

TILLAGE. The cultivation of the soil, for centuries regarded as a necessary and common place part of the husbandman's labors, has received so much attention during the last twenty or thirty years that this part of agriculture may now be almost considered a science in itself. To grow certain plants and destroy others which interfered with their growth,—this was the sole object of cultivation in the older days. And even yet there are many whose conceptions of tillage go no further than this. Certainly this is a primary object. But the secondary benefits derived are so great as to cause the whole question to be looked at in a different light. As this matter of cultivation is of even more importance to the horticulturist than to the general farmer, it may be well to touch on a few points that affect all kinds of fruit alike. Broadly speaking the benefits of cultivation are four :

1. The destruction of weeds, which rob the plants and trees of necessary plant food and moisture.

2. The improvement of the physical condition of the soil, thereby giving the roots a larger feeding ground.

3. The improvement of the chemical condition of the soil, by rendering the decomposition of organic matter much more rapid, and by making locked-up plant food available to the feeding rootlets.

4. The conservation of moisture.

These are all important points, but cannot be elaborated here. The first benefit spoken of is so obvious that mere mention is enough. Of the third, viz., the chemical improvement, this much may be added. Soil may be really rich in plant food and yet produce inferior crops. "A hundred pounds of potash in a stone-hard lump is worth less to a given plant than an ounce in a state of fine division." The key by which many unsuspected riches in the soil are let out is thorough cultivation. On the second benefit from tillage of fruit trees, viz., the extension of the feeding ground for the roots, a few words may be said. All orchards should be thoroughly cultivated when first planted, and in most cases during their lifetime. The question of leaving orchards in sod when of a bearing age will be touched on under the chapter dealing with the apple. If an orchard is properly planted and carefully cultivated the first year or two the roots will

penetrate deeply enough to escape injury from the plow, and the subsoil itself by thorough tillage and efficient drainage will provide a large feeding ground for the tree. On the other hand if these matters are neglected a surface habit of root-growth is

mately related to the plant-food question, inasmuch as water is the medium through which all plants obtain their food. Nearly all fruits, from apples to strawberries, are composed of about 85 per cent. of water. The production of a crop of fruit, therefore, in addition to the building up of the plants and trees, requires an immense amount of soil moisture. Deep plowing and sub-



FIG 1 BAILEY

Roots of a young apple tree in rich tilled land.

formed, which entails severe injuries when subsequent cultivation is attempted, to say nothing of losses in other directions. The differences are very clearly illustrated in the accompanying figures. Fig. 1 is that of an apple tree six years old cultivated from the start. Fig. 2 shows the result when neglect has been the order of the day.

The fourth benefit derived from the proper tillage of the soil, viz., conservation of moisture, is, in many instances, the most important of all to the grower of fruit. It is inti-



FIG 2 BAILEY

Roots of a young apple tree in sod land.

soiling will enable the soil to receive more moisture, and the finer the particles of the soil the greater the capacity for holding water, while surface tillage, breaking the crust of the ground provides a mulch which checks evaporation of the moisture received in the spring and from subsequent rains. This

statement need hardly be dwelt on. It contains an obvious truth, and so important to the orchardist, that in a dry season it simply means the difference between failure and success.

MANURING.—What has been said above about tillage bears closely on the matter of manures. On improperly tilled and undrained lands, a good deal of fertilizing material already in the ground cannot be used by the roots of the trees, and a considerable portion of any that may be added is practically wasted. Speaking generally, land that is in a sufficiently fertile condition to grow good crops of grain or roots, is in condition, also, to grow fruit trees, or produce fair crops of fruit. The demands of the tree soil are, however, of a different character from those made by the fruit. The elements taken from the soil in the growing of trees, bushes, or vines, are in much the same proportion as in the case of many grain and hay crops. Barnyard manure—to the average farmer the cheapest and most convenient form—conveys these elements, nitrogen, phosphoric acid and potash, to the soil in a fairly satisfactory ratio, besides supplying the necessary humus. The composition of fruit is distinctly different. In some fruits practically no nitrogen exists, and with all fruit potash is the preponderant element. When fruit trees are bearing there is a diminution in wood growth, and a consequent less urgent call for nitrogen; and an increased demand for potash to supply the loss occasioned by the removal of the fruit. Unleached wood ashes will provide potash in an admirable form, and with it also a valuable proportion of phosphoric acid. It is much to be regretted that so large a quantity of Canadian ashes are annually exported when the orchards of Ontario are so largely in need of this fertilizer. People who imagine that good crops of fruit can be produced without high manuring would be vastly surprised if they knew the facts.

Prof. Roberts, of Cornell, has very carefully calculated the comparative demands on the soil of wheat and apples. Computations of this kind necessarily cannot be exact, but they are approximately true, and are a valuable guide to those who wish for light on the subject.

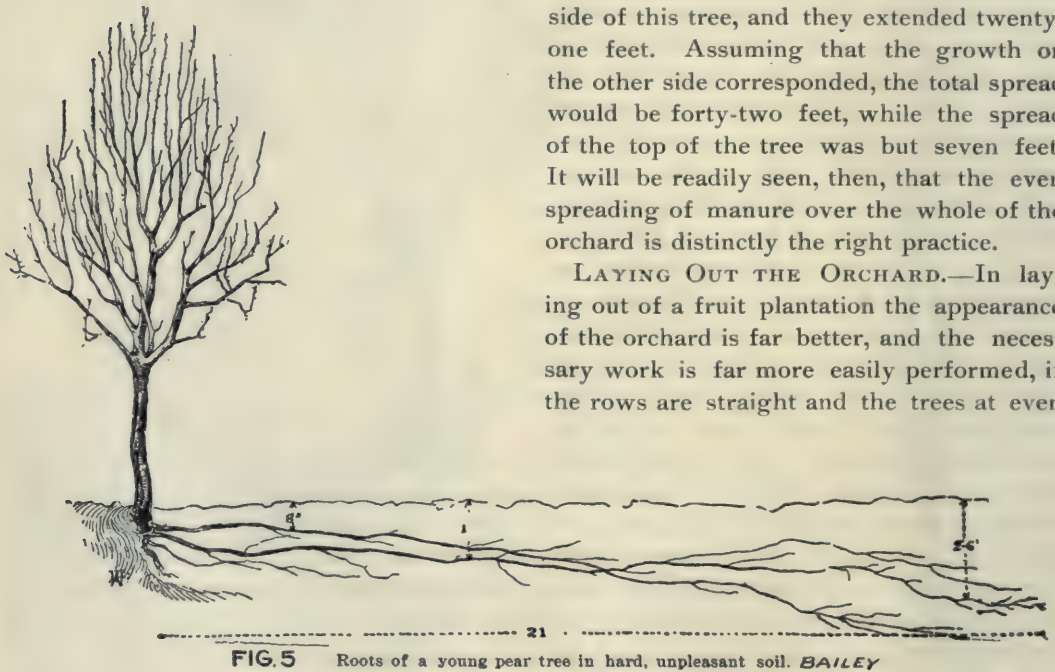
The plant-food taken per acre during twenty years by average crops of apples, counting also the leaves (but not that taken by the wood), and from one acre of wheat by grain and straw during twenty years, assuming an average yield of fifteen bushels and seven pounds of straw to three pounds grain is given below.

	Apples. lbs.	Leaves. lbs.	Value. \$ c.
Nitrogen.....	498.60	456.75	143 30
Phosphoric acid.....	38.25	126.	11 50
Potash.....	728.55	441.	52 65
Total value.....			\$207 45

Grain. lbs.	Straw. lbs.	
424.80	234.78	
160.20	50.40	
109.80	214.20	
.....	.....	\$128 23

Prof. Roberts adds: "The above tables show that the orchard requires, if fruitful, plant food equal in value to eighty-seven dollars more than the wheat. No one would think for a moment of trying to raise wheat for twenty consecutive years, even though the soil was fitted in the best possible manner yearly."

One more point regarding the manner of manuring orchards should be emphasized. The practice of piling the manure, or placing ashes around the tree is common, and is based on a radical misconception of the nature of the root system. Fig. 3 illustrates the point in question. In many trees, as growth advances, the main root is lost in laterals. From these laterals are developed small fibrous roots, and from these again minute root-hairs which convey food and



moisture to the tree. It has been accepted generally as true that the roots of a tree extend as far as the branches. As a matter of fact they extend a vast deal farther, often three times the distance, so that at the ordinary distance of planting there is probably not a square yard of soil in the orchard not occupied by these feeding rootlets when the tree is of a bearing age. Fig. 5 is a reproduction of the actual root system of a young pear tree.

Prof. Bailey laid bare two roots on the one side of this tree, and they extended twenty-one feet. Assuming that the growth on the other side corresponded, the total spread would be forty-two feet, while the spread of the top of the tree was but seven feet. It will be readily seen, then, that the even spreading of manure over the whole of the orchard is distinctly the right practice.

LAYING OUT THE ORCHARD.—In laying out of a fruit plantation the appearance of the orchard is far better, and the necessary work is far more easily performed, if the rows are straight and the trees at even

distances. Of the many methods of laying out, one of the simplest, and one in which the greatest accuracy is obtainable, is the following, illustrated by Fig. 6.

Take a long wire, No. 12 will usually be the right size, (in small orchards a cord will do) and mark off the required distance on it, either by a scratch of a file or by tying on a piece of waxed thread. Let each end of the wire be attached to a strong stake. A B C D represents the field. Measuring the distance from the fence where the first row of trees is to start, stretch the base line F to G placing a small stake at each mark on the wire. Take up the wire and in the same way stake out F H and H I. The wire is then simply stretched from J to K and so on down the field, staking out as before. Quite small stakes, a few inches long do, as no sighting is required. With this plan a planting board as in Fig. 7 is necessary. Take a strip five or six inches wide, and about

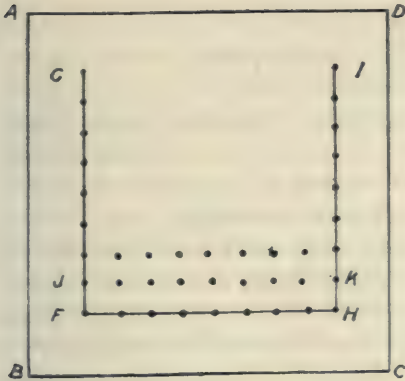


FIG 6. STAKING OUT

St. Catharines, Ont.

six feet long, cut out a notch in the middle of one side and bore holes through the ends at exactly the same distance from the notch. The notch should be about the size of the tree. When all is ready for planting, the board is placed so that the notch fits around the stake, pegs are then put through the holes, the board lifted up over them, the hole dug, the board is then replaced on the peg and the tree placed so that it fits into the notch. If haste is necessary one man can go ahead with a duplicate board and a supply of small pegs, digging the holes and leaving the pegs for the guidance of the planter.

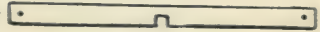


FIG. 7

M. BURRELL.

A COMMERCIAL APPLE ORCHARD.

SIR,—I have just read your "Fruits of Ontario" in the report of the Department of Agriculture and would like your opinion on the following points:

(1) If you were planting a young apple orchard, would you consider Strathroy a safe district for profit?

(2) If you were planting 500 trees (ten acres), what varieties would you select for this district, and in what proportion (out of the 500)?

(3) How long could the land be used for gardening purposes?

(4) What should be the *average* yield per year for ten acres, say twelve years from planting? With six or seven sprayings and fair cultivation? Strathroy.

Yours truly, J. E. W.


(1) Regarding the adaptability of Strathroy to apple culture, a visit to local orchards, especially in fruit season, would be the safest means of judging. After all, the quantity of fruit, the size and color of the samples, together with the general condition of the trees, are the points to determine, and our correspondent is in a better situation to look into these questions than we are.

(2) The selection of varieties for the vicinity of Strathroy would not differ materially from that for any other portion of southwestern Ontario and should include such varieties as Blenheim, Gravenstein, Wealthy, Ontario, Spy and Baldwin. If top worked on Spy or Tolman Sweet the King should be added to this list, and there are other varieties which might be grown with profit.

(3) The land could be used for gardening purposes for perhaps eight or ten years, or until the shade of the trees hindered the growth of the crops planted between the rows. Otherwise hoed crops may be freely grown in an orchard because the cultivation of the soil and the fertilizers needed for such would be a direct benefit to orchard trees.

(4) The yield of an apple orchard for ten years would be practically *nil*, for these are the growing years, and all the fruit gathered in that period would be little more than samples, unless in an exceptional season. Planters usually forget to count upon the years of waiting they must endure before returns can come from fruit trees, or they would more often depend on other crops or resources to enable them to tide over the lengthy interim between planting apple trees and picking apples. Possibly an average of a half barrel per tree might be counted upon during the eleventh or twelfth year after planting, excepting from Spy and King trees, which would be later in coming into bearing. After that, for two or three years one might count on one barrel per tree, under favorable conditions, and so on increasing until at twenty-five years four barrels per annum would not be an unreasonable crop to expect.

SOIL TREATMENT FOR FRUIT GROWING.

T the recent meeting of the British Columbia Fruit Growers' Association, held in Vancouver on Tuesday, the 9th of January, Prof. Shutt, chemist of the Central Experimental Farm, was present and gave an address on fruit growing of which the following is a synopsis:

In appearing for the first time in his official capacity as chemist of the experimental farms before the convention of British Columbia Fruit Growers, Mr. Shutt said there were two thoughts uppermost in his mind; the first was that he might be able to say something of real value to his hearers, something that might be of practical assistance to them in the prosecution of their occupation. The second thought or wish was that during his visit, though it was at an inauspicious season, he might be able to learn much regarding the nature of the various evils to be met with in the province, the fertilizers necessary to increase production and the climatic influences that prevailed. For many years he had endeavored to solve in the laboratories at Ottawa some of the problems that confronted B. C. agriculturists, and he hoped on this visit to gather information which would help him in this work, for he had the interests of British Columbia as much at heart as those of Prince Edward Island or any other province of the Dominion.

Commencing with a brief outline of the nature of soils in general, Mr. Shutt explained their origin and gave the chief characteristics as regards chemical composition and mechanical texture of soil of various classes. The importance of correct proportions of mineral and organic ingredients was then dwelt upon, if the best results as to crop production were to be expected. Mineral matter, including lime, phosphoric acid and potash were necessary for plant growth; organic matter was the store house of nitro-

gen—an essential element of plant food—and also the conservator of soil moisture—perhaps the most important of all the factors which go to make up fertility.

The next matter taken up in detail by the speaker was the nature and sources of plant food, explaining that the carbonic acid always present in the air furnished the larger portion of plant nutriment. This gas was absorbed by the leaves through the agency of sunshine. The mineral portion was extracted and absorbed by the rootlets from the soil.

The question of availability of plant food in the soil was then emphasized. It was only such plant food as was soluble that was of value to crops. Continuous cropping necessarily reduced the amount of such in the soil. Not only must plant food be returned if fertility is to be maintained or increased, but good cultural methods must be followed to render inert or locked up food assimilable, as well as to make the soil absorbent of moisture and a comfortable medium in which the roots can forage.

Acidity or sourness of soils was injurious to luxuriant growth. This was to be overcome by drainage and if necessary by an application of lime. Drainage is necessary for both light and heavy soils, not only to take away superfluous water but to render them mellow and improve their capacity for moisture and heat, for wet soils are cold soils. Many soils are deficient in lime, such are frequently sour. Mr. Shutt expounded a ready means or process whereby every farmer might easily ascertain whether a soil is lacking in this element, which is not only a direct source of plant food, but also useful in liberating potash from the rock matter in the soil. The exclusive use of lime was pointed out as an injurious practice, but together with organic manures was to be highly recommended. Light and frequent

application were to be advised rather than heavier ones at longer intervals. In answer to an enquiry Mr. Shutt mentioned twenty to forty bushels of lime per acre as an average dressing.

The furnishing of humus or vegetable matter was next taken up. After a brief account of the composition of barn yard manure and cautioning his hearers against allowing the loss of the liquid portion—which is by far the more valuable of the two—the value of clover as an economic means of supplying humus and nitrogen. The legumes—to which clover belongs—are the only crops which have the quality of appropriating free nitrogen from the air, they are therefore nitrogen-enrichers.

Experiments at Ottawa show that the turning under of a crop of red or mammoth clover would furnish a soil with as much humus and nitrogen as a dressing of eight or ten tons of ordinary manure. Clover should also be sown in the autumn as a catch crop in order to hold the soluble nitrates which would be leached out by the winter rains.

In bringing the address to a close Mr. Shutt briefly outlined the composition and function of the more important commercial fertilizers—bone-meal, super-phosphate and

the German potash salt. He suggested as a basic formula the following per acre:

Bone-meal, 100 lbs.

Superphosphate, 100 lbs.

Muriate of potash, 100 lbs.

Before prescribing more particularly it would be necessary to know the character of the soil, its history as to manuring, and the crops it is wished to grow. The value of getting a soil in good condition before planting the orchard was emphasized. It was a poor policy and loss of time to plant trees in impoverished soils. Good growth must be made in early years of the tree's life, so that they may be fruitful when they reach maturity.

After Mr. Shutt had finished several gentlemen took part in the discussion, and a number of very pertinent questions were asked, among others by Mr. Sharpe, from the experimental farm at Agassiz, and Mr. E. Hutcherson, Ladner. Among other questions was that of whether there might be any difference in the chemical constituents of plums grown in different parts of the province, which would affect their keeping qualities.

The meeting accorded a hearty vote of thanks to Mr. Shutt for his very able and instructive address.

NOTES ON SMALL FRUIT CULTURE.

I NOTICE that some Canadian, as well as American catalogues, are advertising the following novelties as desirable and productive fruits to plant. Having had four years experience with them I thought I would let your readers know how they have done with me.

STRAWBERRY-RASPBERRY.—I have found perfectly hardy, it grew finely but set fruit very sparingly. The fruit was large and very handsome, the berries were firm but insipid and worthless to eat. But while it is worthless as a fruit, it is very handsome as

an ornamental plant. It never winter kills. It is easy to grow. Foliage hangs on till late in the fall, then it dies down to the ground, but comes up very early in spring and grows very rapidly to a height of about eighteen inches. The leaves are long and deeply serrated, are a beautiful bright green color; they grow thickly and lay over each other so as to completely hide the ground. It commences to blossom early in June and continues to bloom till October. The blossoms are about an inch and a quarter in diameter and pure white, about one tenth of

the blossoms produce fruit; both the blossoms and the fruit set up prominently on the outside of the bushes, making the bushes very handsome and interesting. It would make a very pretty border or miniature hedge.

MOUNTAIN CHERRY.—This is a small shrub growing only about four or five feet high. It is rather pretty, the leaves are small and abundant. The blossoms are very small and

very numerous. The fruit sets freely and ripens nicely. The fruit is black and small and poor quality. It would do to grow as an ornamental shrub.

JAPAN MAYBERRY.—This is very tender; it kills down to the ground every winter and is worthless here.

S. H. MITCHELL.

St. Marys, Ont.

THE CANADIAN PAPAW.

DEAR SIR,—It is perhaps not generally known to the readers of your journal that there is such a valuable fruit grown in the Niagara district as the Papaw (*Asimina triloba*). This fruit is grown from the Niagara Glen to near Niagara-on-the-Lake, and from Queenston to Thorold along the mountain; the plants grow from a shrub to a small tree, and in some places where I found it growing it was in considerable plantations; the largest about one-quarter acre. The largest specimen measured twenty-three inches at the butt of the trunk in circumference. The tree flowers about the first of June, preceding the leaves; the flowers are at first green, but when fully expanded they are of a dark dull purple. The fruit resembles very much a small banana, and is kidney shaped; there are from one to three in a cluster on the ends of the branches, and they are eatable when touched by frost in the fall. A clump of these trees is a beautiful sight to look upon for a tree lover; they resemble very much the magnolia acuminata in tree and foliage.

I was talking to Mr. Davis Allan, Commissioner to South Africa, this past fall, and he told me that the papaw fruit is very plentiful in South Africa, and one of the most useful fruits they grow. It is used princi-

pally by their cooks when their beefsteak is brought into the kitchen by the butcher; the cook rubs into the steak on both sides a ripe papaw, and when cooked it is as tender as a chicken from the effects of the fruit. Do you not think then that I have struck a gold mine since our beefsteak is so very tough in Canada? But there is still another use to which the people in South Africa put the papaw. Any person troubled with indigestion or dyspepsia takes a ripe papaw and grates it into a dish and eats or drinks the same, and it dispels the very worst attack. Now, Mr. Editor, you may think me foolish to give away such a good receipt, for many a man would make a fortune out of it. I do it to relieve the thousands of men and women troubled with this dreadful disease in Canada.

The ingredients of the papaw fruit, Mr. Allan says, are exactly the same as a fowl's gizzard, and that is why it makes beef tender and cures dyspepsia. So it will now pay me to put a watch on my orchard of papaw fruit, as well as on the chicken roost, lest the white boys pay them a visit for their gizzards.

RODERICK CAMERON.

Niagara Falls South.



TIMELY TOPICS FOR THE AMATEUR.*



FIG. 1767. WM. HUNT, HAMILTON.

MARCH! stormy, fickle March! probably the most trying month of the year for plant life, whether in the garden, greenhouse or window; its bright sunshiny days, that often lure the unwary plant lover into a feeling of false security, the sudden and extreme drops in temperature, and cold biting winds, seem all to combine to bring disaster to our favorites at a time when success seemed fully assured. Many a fine collection of plants has

been almost ruined, after a winter's close care and attention, by the delusive vagaries of March weather. Moral! watch the thermometer outside closely, don't neglect fires altogether, ventilate carefully, and do not forget to close sashes and ventilators early in the day.

THE GREENHOUSE.—Cinerarias, Calceolarias, Cyclamens, Hyacinths, Narcissi, Primulas, and perhaps a few blooms of early flowering fancy Pelargoniums, will make the greenhouse look gay at this time of year. Zonale Pelargoniums should also begin to make a display of bloom; these latter should have a little manure water to help them out if the pots are full of roots. The bright yellow-flowered Genistas should still brighten up the house with their golden beauty; a cool moist atmosphere suits these plants best, as they continue in flower for a much longer period than if grown in a high temperature. The Genistas are easily propagated by cuttings of the young growth, taken soon after the plants are out of flower; the cuttings should be inserted in sand until rooted, and then potted in rather sandy soil

*NOTE.—It will be necessary for our readers to make some allowance regarding the time and dates mentioned for sowing seeds, etc., and for outdoor work in the garden, as this article is written more particularly for Southern Ontario.

and grown on until they can be planted outside in the border in June; they will make nice plants to pot up in the fall for next season's flowering.

Cuttings of *Stevias*, *Eupatoriums*, *Heliotrope*, *Rex* and winter flowering *Begonias* should be taken now and grown on for next winter's flowering, also cuttings of *Coleus*, *Ageratum*, *Achyranthes*, *Alternantheras* and other bedding plants. *Chrysanthemum* cuttings started now have yet time to make good sized plants, if treated liberally as regards repotting. It is late for *Carnation* cuttings, January and February are the best months for these; if a few are needed, place the cuttings in sand, in a pot or shallow box, stand them on a shelf near the glass, not in too sunny a position, keep the cuttings well watered; you will be more successful with them than if started in a cutting bed. Shade the cutting bed during hot midday sun. Autumn struck *Geraniums* should have their final potting into 4-inch pots. Dutch bulbs in flower, *Calla* and *Easter Lilies* and all growing plants require plenty of water, especially *Spireas*. Use tepid water, water thoroughly, and only when needed, and early in the day.

Old plants of *Fuchsias* that have been kept dormant during winter should now be brought out into the light, watered and syringed occasionally to start them into growth; as soon as the buds appear cut the tips of the old branches off so as to make the plant shapely, shake the plant out of the pot, removing about half of the old soil, repot into the same size or a size larger pot, give them good, rich, light soil, water when needed and syringe often. A partially shaded position suits them best. *Freesias* should be kept growing after they have done flowering until the foliage shows signs of decay, then withhold water gradually until the foliage is pretty well yellow, when no more water should be given them, the pots can then be stood back on a shelf or put into the potting shed, at a temperature of about 45°,

and kept quite dry until they are repotted in July or August. Repot *Palms*, *Cordylines* and *Ferns* if needed, and not already done. Shade the plants slightly at midday to prevent scalding, which often disfigures palms, etc., badly at this time of year.

Insect pests will increase rapidly as the heat increases. *Aphis* and red spider will probably be the most troublesome. Tobacco water and fumigating with tobacco destroy the *Aphis* or green fly most effectually. Light fumigations and frequent are better than heavy fumigation; dampen the tobacco stems before using. Sprinkle the floors liberally with water, syringe the plants well and close the house early, so that the temperature rises quickly; this will help to keep down the red spider.

Seeds of *Alyssum*, *Petunia*, *Verbena*, *Golden Pyrethrum* and *Lobelia* should be sown at once for bedding purposes. A few *Nasturtium* seeds, two or three in a three-inch pot, will come in useful for hanging baskets and vases later on; all other hanging basket plants should be grown rapidly. *Hydrangeas*, *Oleanders*, *Agapanthuses* and similar plants that have been dormant during winter should be brought out, cleaned up, and repotted if necessary. Tuberous *Begonias* may be started at any time now. Ventilate cautiously during early spring.

WINDOW PLANTS.—Look out sharply for insect pests, avoid cold draughts, give air from windows in an adjoining room, rather than directly on the plants; lower the top sash, there is less risk than in raising the lower sash. Repot all plants that need it that are required for summer growth or flowering. Water the plants thoroughly when needed, syringe frequently with tepid water, choosing a warm sunny morning if possible for both operations. A few pots of flower seeds may be sown for early planting.

FLOWER GARDEN.—Very little can be done as a rule in the flower garden at this period, unless spring is unusually early. Toward

the end of the month take a peep at the Dutch bulb beds, if the bulbs are showing growth above ground, and the weather is mild, a portion of the winter covering may be taken off, but leave sufficient of the lightest part of the covering to loosely cover the growth; this can be removed later on, when the tips of the growth have hardened and the weather becomes warmer. Sow Sweet Peas and Mignonette as soon as possible after the ground is in good condition. Uncover all shrubs and trees as well as perennial and biennial plants that have been protected during winter; exposing them gradually to the sun and air, as recommended before for bulbs. Flower seeds of various kinds can be sown in pots or boxes and started in the hot bed for early flowering, such as Asters, Campanulas, Alyssums, Calliopsis, Cosmos, Dianthus, Gaillardias, Petunias, Marigolds, Zinnias, etc. Some of the new varieties of the *Centaureas* (corn flower) and the useful annual summer flowering *Chrysanthemums*, better known perhaps as *Marguerites*, are very beautiful and easily grown. A few of the old fashioned *Antirrhinums* (Snap Dragon) should be grown, they will give you spikes of bloom from July through the scorching hot days of August, when flowers are often scarce, and continue in flower until severe frost sets in. A few *Nasturtium* seeds, two or three seeds in a three inch pot, will make useful plants for trellises, vases and similar uses. Some seeds of the beautiful and vigorous exotic climber, *Cobea Scandens*, may be sown, one or two seeds in a four inch pot and transplanted into the open ground in June after all danger of frost is gone; this plant makes a gorgeous climber for covering wire trellises around verandahs during the summer months. Prune hardy roses as soon as the young buds show.

FRUIT GARDEN.—All pruning should be finished this month. Gooseberries, and both red and white currant bushes should be

pruned on the spur system, by cutting back the growth of last year, leaving only two or three of the buds at the base for future fruit buds. Black currant bushes should not be topped, but merely thinned out as required. Remove all useless suckers from all fruit trees, also all branches of fruit bushes that touch the ground, except gooseberries. The lower branches of these latter may be layered if young trees are needed, and this is done by pegging down the lower branches with a forked stick at a point as near the main stem of the bush as possible, and throw a spadeful or two of earth over the branch where pegged down; in a year's time you will have some nice young bushes for transplanting. Strawberry beds that have been heavily mulched should be partially uncovered.

VEGETABLE GARDEN.—The asparagus bed generally requires the first attention in the spring; fork it lightly over and rake off a part of the winter's mulching of manure, give it a good coating of salt, a bushel to the rod will not be too much if the bed is well established. This delicious and healthful vegetable should be grown by every one who has a small patch of garden ground, it requires very little care when once planted, and well repays any labor expended on it. Sow a few rows of spinach, parsley, onions and peas as soon as you can work the ground; sow early and late varieties of peas at the same time, you will then have a succession of pickings by this method. Sow parsnips and plant artichokes as early as possible. A row or two of early carrots and beets may be risked. Mustard and cress seeds may be sown and placed in a hot bed, or even in a window. A good method of sowing mustard and cress is to get some shallow boxes, about two inches deep, fill them three parts full of good soil, level and press the soil firmly, sow the seed thickly so as to nearly cover the soil, press the seed slightly into the soil with a smooth piece of board, but put no soil over the seeds at all,

water plentifully and carefully ; by this method you will have an appetizing salad fit for use in a week or ten days that will be free from the customary ingredients of grit and dirt. Lettuce and radish seed may be sown, and any very small onions left may be planted in the hot bed, they will come in for an early relish. A few early seed potatoes may be taken from the cellar or pit and spread out near a window so that they are

safe from frost ; they will be nicely sprouted by the time they are required for planting. A week or two can be gained by digging time by this method if properly managed. Sow a few pots or boxes of tomato, early cabbage, cauliflower, and a few pepper seeds, put them in the hot bed and transplant into cold frames when ready ; they will make nice plants for early planting in the garden.

HORTUS.

NOTES ON SOME GOOD TREES AND SHRUBS.

THE following notes with accompanying photographs, were kindly furnished us by Mr. R. Cameron, Supt. of Victoria Park, Niagara Falls :—



FIG. 1768. OAK LEAVED MOUNTAIN ASH.

The White Fringe Tree* (*Chionanthus Virginica*), though a native of North America is very scarce ; indeed I do not know of another in this vicinity excepting that shown in the frontispiece, which is growing on the beautiful grounds of Mrs. Jas. Wilson, who is one of the directors of our Society. I

always admire the White Fringe when in bloom. The flowers are white, grown in terminal racemes, and are quite fragrant. After blooming in May, this plant of Mrs. Wilson's, which is about ten feet high, produces a crop of purple fruit, like small olives, and indeed the White Fringe is a member of the olive family (*Oleacæ*). It receives its name, White Fringe, from the flower being cut into narrow segments.

The tree is propagated by grafting it upon the common Ash, or from the seeds, which resemble common plum stones.

Oak Leaved Mountain Ash (*Pyrus Quercifolia*). This tree stands at the side of the residence of Mr. J. Gallinger, Stamford, one of the directors of our Society, and is probably the finest specimen of its kind in Ontario. The Oak-leaved Mountain Ash is an excellent lawn tree and endures for many years. It grows to a height of thirty feet and the spread of its branches is about the same. The branches are very dense, the leaves deeply lobed, bright green above and downy beneath. When the tree is in flower it is a beautiful object, but when covered with fruit in the fall, few trees can be compared with it.

*See frontispiece.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

The VIBURNUM OPULUS offered Horticultural Societies is the well known Snow Ball. The variety is *sterilis*, which is very free blooming, and satisfactory as a lawn shrub.

INDEX FOR 1899.—We regret a mistake of the printer of the index in using a page too small for binding. Anyone wishing an index suitable for binding will please write to the secretary for another one.

CANNED FRUIT SHORT MEASURE.—Chicago dealers in canned goods complain that eastern fruit packers are systematically putting up short measure. One can, for example, supposed to contain one gallon, was brought into court, and found to be $1\frac{1}{2}$ pints short measure. We have no sympathy with such trickery.

OUR WORK TOO LITTLE KNOWN.—Major Sheppard, of Queenston, complains that the public do not know enough of our work and plans. With 5000 copies of our journal in circulation each month, and 7000 copies of the report of our meetings, we did not suppose much more publication needed to show the public what we are doing in the interests of Ontario fruit growers.

THE PARK SYSTEM OF TOLEDO, OHIO, has become the pride of that city. President Jermain, of the Park Board, recently presented his report, in which he states that more than 600,000 people have visited these parks during the past year. One interesting feature was the series of Park Concerts by the Park Board at a cost of over \$1000, which had proved an unqualified success.

QUESTION DRAWER.

The Stark.

1137. SIR,—Where do you rank the *Stark* among our apples?

INQUIRER, Strathroy.

The *Stark* is a large sized apple, rather coarse in texture, of a dull red color, but on the whole of good appearance, and good shipping and keeping qualities. We should rank it second to *Baldwin* as a commercial apple; though with our friend Mr. Dempsey, of Trenton, it is a favorite shipping variety.

Plum Rot.

1138. SIR,—Has anything been discovered that will cure plum rot? Does *Curculio* increase rot?

G. F., Waikerville.

The plum rot (*Monilia fructigena*) is propagated by minute spores, which are produced on the outside of rotten specimens of the plum, and are easily distributed by the wind. When these light on a healthy plum, where moisture is present, they quickly start fresh rot. The rotten plums hang upon the tree and soon become dry and mummified. These mummified plums hold some spores until spring, at which time they seem to produce still more of them, and so continue the evil into a new year. It is there-

fore evident that all rotten and mummified plums should be gathered and burned as soon as discovered, as a precaution against plum rot; and secondly, that spraying should be carefully done with Bordeaux just before the blossoms open, then as soon as the fruit is well formed, and again about two weeks later. This is the only treatment we know of to prevent this evil, and this will only do so in part, not completely.

Grafting.

1139. SIR,—If one were grafting *Spy* or *King* on *Talman Sweet*, at what age of the young tree should the grafting be done? and which is the best mode of grafting?

INQUIRER, Strathroy.

The grafting of an apple tree may be done at any age, but the mode would differ with the age. Two year old seedling apple trees may splice grafted at the collar in doors in the winter, and set out in nursery rows in the spring. Four or five year old trees are whip grafted four or five feet from the ground in spring as they stand; while older trees are cleft grafted, usually cutting limbs about two inches, more or less, in diameter, or they may be crown grafted on large branches.

Open Letters.

Dishonest Packing.

SIR,—I have from time to time followed with much interest your articles on dishonest apple packing, and when I saw on page 28 of the last *Horticulturist* that the "great indignation" of the fruit growers, in session assembled at Whitby, had culminated in a series of resolutions asking for legislation to carry out their proposed regulations, I earnestly hoped that a great step in advance had been taken to remedy this crying evil.

Is the proposed step really in advance? Is it not rather a backward one?

Sec. 3 of these proposed regulations reads: "That all apples or pears packed in closed pack-

ages be subject to inspection by the Government Inspector, and, in case of ten per cent. of the packages of any one grade being found fraudulently packed, the shipper be liable to a fine not exceeding 50 cents a barrel for all packages of that grade."

Briefly stated this section would allow a dishonest shipper to cheat you in nine barrels out of every 100; but if you were smart enough with the aid of the Government Inspector to catch him trying to palm off *more* than these permitted nine barrels, then he would simply have to discount 50 cents each from the market value of such fraudulent barrels, which he could well afford to do, as each one that he was able to palm off uncaught would net him from \$1 to \$3 more than its value.

To illustrate: A barrel of beautifully-faced Spys which I bought in Montreal last spring at a high price contained nothing but rubbish under the facings. The honorable dealer from whom I bought it paid me back \$1 of his own accord, and my own loss was certainly \$2 more. Now, what would a 50 cent fine against a packer of more than nine such barrels in a 100 amount to? Wouldn't it be a farce?

Everybody knows the penalty for light weight in the "staff of life," and heartily approves that *every loaf* so found wanting shall be confiscated and sent to the hospitals. Now, why should the fraudulent packer of this universally used fruit (which could very properly be called the "staff of good health")—why should he escape with any lesser penalty? If any discrimination between the two be made should it not be in favor of the baker, whose fraud can so easily be detected and without appreciable trouble, and which of course is by no means the case in a fraudulent barrel of apples, as so many of us know at our cost?

I therefore beg leave to "move an amendment" to Sec. 3, and to substitute therefore:

"Sec. 3.—1. That all apples packed in closed packages be subject to inspection by the Government Inspector, and in case of any package of any one grade being found fraudulently packed and not up to the standard of the grade labelled upon such barrel, that the same be confiscated by the Government Inspector.

"2. That full reports of all such confiscations be published in the next succeeding number of the Canadian Horticulturist and such other papers as may be deemed advisable."

It seems to me that any less stringent regulation would be ineffective, and would not commend itself to the public generally, and I hope your *honest* fruit growers will be satisfied with nothing less.

There is still another serious objection to your section 3. Every one knows that a packed barrel of apples cannot be properly inspected and repacked without injury to the keeping qualities of the fruit, for no matter how carefully it be done, many of the apples are sure to get fresh bruises.

Now, under your section 3, no one would be at all safe in buying any barrel *not inspected*; but the proposed amendment would very soon, I think, be effective in reducing the number of barrels necessary to be repacked and inspected fully 75 per cent, perhaps more, to the considerable advantage of the keeping qualities of the fruit, and would of course greatly reduce the work and cost of inspection.

Is not "an ounce of prevention" worth far more than "a pound of cure" in this case?

Would not this suggested amendment be to the *eventual* profit of *all* fruit growers, for would it not force some of them, perhaps unwillingly at first to invest in sprayers and to carefully use them, and also to cut down worthless trees in their orchards, replacing them by better kinds? They might also soon get into the way of thinning their growing fruit, to its great improvement and better financial return.

Does some one "second my amendment" or offer a better one? GEO. O. GOODLINE.

Danville, P.Q., 26th Jan., 1900.

NOTE BY EDITOR.—The criticisms of our correspondent reveal an ambiguity in the wording of clause 3, which has since been corrected. The clause was intended to save the labor of inspecting every package by providing that if ten per cent. were found fraudulent the whole lot might be so classed without further examination. Thus, if the first ten barrels opened out of a lot of 100 be found fraudulent, the inspector could count the whole lot as fraudulent and fine the shipper \$50 on the whole lot.

The following is the amended reading of the clause:

"3. That all apples or pears packed in closed packages be subject to inspection by the Government Inspector, and if on opening one-tenth of the number of packages in any one lot, these be found fraudulently packed, then the nine-tenths remaining shall be so classed, and the shipper be liable to a fine not exceeding 50 cents a barrel for all packages of that grade in the same shipment."

More About Flowers.

SIR,—I like your magazine; it is good in every way, except that more space might be devoted to flower and vegetable culture. I don't grow any fruit, and I suppose there are a dozen who are fond of gardening who do not to one who does. We have not got one good *gardening* magazine in Canada that I know of. I cannot call yours such yet, though I hope it will become one—that department of your magazine is only, one might say, rudimentary yet. I know *American Gardening*, and better still, in its earlier stages, *Gardening*, of Chicago. It was an excellent publication then, now sadly fallen off. I'd gladly double my subscription to yours to get the information and helps *Gardening* once furnished its readers with. I say this to encourage you to work in the direction of gardening as distinct from fruit growing more. There is a large and growing field for such a magazine in this country.

Yours truly, A. B. O.

Ingersoll.

We have frequent requests from flower lovers asking that more attention be given to floriculture, and quite as often we have letters from fruit growers asking that more attention be given to their particular department. Primarily, of course, our journal is intended

for fruit growers, but since so many horticultural societies have affiliated and our membership now includes so many interested in floriculture, we are compelled to give

more attention to this department. We shall always appreciate suggestions from our readers, and beg their aid in making this journal increasingly useful.

Our Affiliated Societies.

ORILLIA.—At a meeting of the Directors on the 13th of November last, it was resolved that a grant of \$30, or so much less as might be required to pay the prizes awarded for fine arts, be made to the East Simcoe Agricultural Society, provided it could legally be done, and the Secretary was instructed to communicate with the Department of Agriculture in the matter. The following is the reply of the Department: "In reply to your letter, I beg to state that it seems to us the present proposal of making a grant to the District Society sufficient to pay the fine art prizes, in no way differs from your previous practice of paying these prizes direct. The act certainly does not contemplate allowing Horticultural Societies to pay for prizes outside of Horticulture, and we are not in a position at present to know whether such action on the part of your Society would meet with protest from any source, or whether it would meet with the approval of all parties concerned. The District Society, of course, would be pleased. Then, I take it for granted that the members of

your Horticultural Society are unanimously in favor of it. There are, however, four other societies interested, and it would be quite within the province of any one of them to object to our paying money to your Society to be used for the purposes other than the act states. We are not going to say under the circumstances that you must not make the grant this year. If you make it you must assume full responsibility, and it must not be taken as a precedent for next year." The foregoing letter was read at the annual meeting, and the Secretary stated that on receipt of the letter he had consulted with the President, and it was deemed advisable to reserve the matter for the action of that meeting. Some discussion ensued, and it was moved by Mr. Alport and seconded by Mr. Street, and resolved, that, in view of the letter from the Deputy Minister of Agriculture just read, this meeting is of opinion that none of the funds of the Society should be expended for any object not fully justified by the act of the Legislature.

Our Book Table.

EXPERIMENTAL FARMS.—Report for 1898. Dr. Wm. Saunders, Ottawa.

A fine report, showing what valuable works these farms are doing for Canada.

THE GARDEN.—A weekly illustrated journal for garden, orchard and woodland, Volume 57. Office, 20 Tavistock street, London, W. C., England.

For a long time this journal has been among the most valued of our exchanges, being conducted with exceptional ability and containing articles of exceptional value to gardeners and fruit growers. Of course the matter is adapted to English conditions, but aside from this it is in advance of American journals in teaching methods of intensive horticulture. The journal has recently changed hands and is the property of the managing owners of "Country Life." The editors are Miss Jekyl and Mr. E. T. Cook, whose ability is well shown by the excellent issues so far sent us for 1900.

FRUIT AND ORNAMENTAL TREES, Roses and Shrubs, grown and for sale at Central Nurseries by A. G. Hull & Son, Central Nurseries, St. Catharines, Ont.

DIRECTIONS FOR SURVEYING AND ARRANGING HOME AND SCHOOL GROUNDS, a well illustrated pamphlet, written and published by W. H. Manning, Tremont Temple, Boston, Mass.,—in press. Price, 25 cents. 1900.

A HAND BOOK FOR PLANNING AND PLANTING HOME GROUNDS.—Written by W. H. Manning, Boston; published by Stout Manual Training School, Menomonie, Wis., 1899. Price, 35 cents.

These are two books of great value in their respective spheres, the one giving directions for surveying and arranging home and school grounds, the other for planning and planting the same. Being prepared by one of the leading landscape architects in America is alone a sufficient guarantee of the practical nature and excellence of these books, which has been so highly appreciated by Mr. Stout, the founder of the Training School at Menomonie, Wis., that he has published the hand-book for use at the school.

We shall be pleased if we can be the means of introducing these books into Ontario for the encouragement of landscape gardening, and thus helping to beautify the parks and gardens of our country.

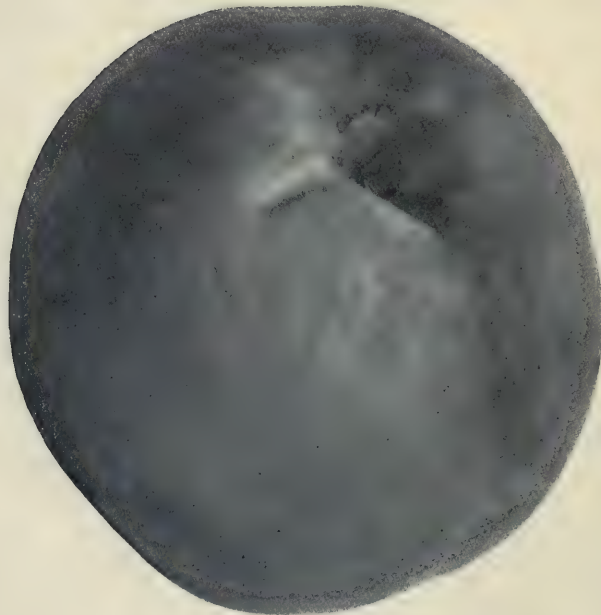


FIG. 1769. THE ELBERTA PEACH.

THE CANADIAN HORTICULTURIST

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** APRIL **

THE ELBERTA PEACH.

ABOUT forty years ago, when our Association was first organized, fruit growing could scarcely be called a distinct vocation; and the small crops harvested in the garden or orchard were taken to the nearest market along with the butter and cheese. In the oldest Report of our Association, published in 1863, reports were collected from the various counties, showing what fruits could be grown; and, in those from the County of Wentworth, we read, "The peach crop is uncertain. Severe cold destroys the fruit buds, and it is sometimes sufficient to destroy the trees. It is recommended to train them on walls, or trellises, and protect them;" and even under Lincoln County we read "the peach crop is uncertain."

A great change has come over this whole district, and peach orchards of large acreage have been planted, until the crop now moves in car loads, all our large markets are glutted with this delicious fruit, and prices have dropped from \$3.00 to 50c. a bushel. Naturally this condition of things led us to try exporting the peach, and the magnificent

Crawford was first packed for export. It was a magnificent failure, for it was too soft for carriage to a distant market. Just at this time the Elberta was introduced from Georgia, a cross between the Chinese Cling and Crawford's Early. It was planted with caution, because originating so far south, but it surprised everybody with the hardiness of the tree and the good shipping quality of the fruit. Then we proposed that it be tried for export, and a few boxes were timidly forwarded in cold storage. The result was surprising; it carried in perfect condition, and now it is looked upon by the shippers as the peach for export. The fact is that for this purpose the many-variety system, which is well enough for home markets, is all wrong; and instead we want just about one first-class, high grade variety of peach, pear, apple and grape, and ship that variety in such quantity as to make an impression on the English market, and make it known as the characteristic sample of that fruit from Canada. It may interest some readers to have a brief technical description of this comparatively new and valuable variety.

ELBERTA—The best peach of its season for all markets, and the only variety especially suited for export by reason of its shipping qualities.

ORIGIN—Georgia; a cross between Chinese Cling and Crawford's Early.

TREE—Vigorous, hardy, and moderately productive, carrying as many samples as a tree should, and if a heavier cropper, would need careful thinning. The leaves are quite subject to curl leaf; but this may be controlled by spraying.

FRUIT—Medium large, round oval, one side somewhat larger than the other, suture distinct; skin, lemon yellow, with fine red cheek; stone free, deeply corrugated, pointed. **FLESH**—Yellow, tender, juicy, melting; flavor rich, agreeable and very good.

SEASON—September 20th to 25th, about a week later than Crawford's Early.

QUALITY—Dessert very good; cooking best.

VALUE—Home market very good; foreign market, best.

PROGRESS, THE MOTTO IN FRUIT GROWING.

WE have often advocated improved methods in fruit growing, and no doubt many of our readers have themselves felt the importance of waking up to the new conditions of this era. New markets require new packages, special varieties, and special storage. Twenty-five years ago, when we planted our orchards, it was with the view of pleasing our near markets, and we filled our order with all the varieties in the nurseryman's catalogue; but now, for distant market, we want just one or two special varieties—the best of their kind, so that we may gain an honorable name, and consequently high prices. To do this we shall be compelled to top graft our apple and pear orchards, and replant our peach orchards, with a view to the special demands now claiming our attention. Perhaps no one man at the present day has done more to give us high grade varieties of fruits than Mr. Luther Burbank, of California, and we quote what he says in the American Agriculturist on the subject before us. He says:

The fruit grower of to-day must have the ability to adapt himself to the new methods, new fruits and new markets. By use of cold storage and rapid transit the finest fruit from every land can

be found in any large market, both in and out of season, for while the fruits of one hemisphere are first waking from their winter's sleep, on the other the summer sun has done its work and the ripened fruits are on their way to distant markets. With the world as a market, competition is keen, and only the best fruits in the best condition will pay. Furthermore, it generally costs much less per ton to produce large, first-class fruit than the poorest, meanest specimens that are ever offered. Small fruit exhausts the tree more rapidly than large fruit. It will thus readily be seen that improved varieties which produce uniformly large, fine fruit are the more economical manufacturers of fruit, and also that the product is more salable.

The tree which needs a good deal of pruning to keep it in proper form and vigorous health should be replaced by one that has a better habit of growth, for every ton of wood taken unnecessarily from an orchard represents at least as much weight of fruit. Many varieties have two or three superior qualities, but woefully lack in many others. The fruit grower of to-day is simply the manufacturer, and should have the latest and best improvements. Of course there never can be one variety which will be best for all purposes, but it is perfectly possible to produce varieties which for their own special use can be relied upon to produce full crops of the best fruit without fail. All this can be done by careful selection and breeding.

BETTER PRICES.—Fruit growers have had their seasons of discouragement, too many of them, but now the indications are brighter. Canners are already making contracts for fruit at higher prices, showing that their goods are on the advance.

THE CARE OF SHADE TREES—III.

FUNGOUS DISEASES.

IT is a matter of common observation that fungi play a very important part in the life of many trees, and frequently the most serious disturbances of their vital processes are brought about by the action of these lowly organized plants. It must not be supposed, however, that all the fungi, living in vital connection with trees, are harmful, for recent studies show that many of our common



FIG. 1770. *Agaricus melleus* (Tree Root-Rot).
A group of plants clustered at the base of a tree, and showing the cap, stalk and gills. The spores are set free from the edges of the gills. (After Massee).

trees, such as pine, spruce, tamarack, beech, oak, hazel, hornbeam and birch, have their fine rootlets covered with a sheath of fungous threads by means of which the feeding processes are accomplished. These fungous threads, or mycelium, take the place of the root-hairs of ordinary plants, and absorb the food materials from the soil. There are other examples of the fungi and roots living in intimate vital connection, and for their

mutual welfare. Most of the members of the heath family, most of the perennial plants living in meadows on peaty and humous soils, and the members of the legume family, have fungi living symbiotically with the roots.

Inasmuch as fungi are incapable of manufacturing plant-food out of inorganic food-materials, and must feed upon the already prepared food in the decaying vegetable matter of the soil, it becomes highly necessary that the supply of humus be maintained in the form of litter and forest mould in our parks and woods.

The fungi affecting shade trees may, very conveniently, be divided into three classes, according to the parts of the trees they affect: 1. Fungi affecting the roots and base of trunk; 2. Fungi affecting the stems; and 3. Fungi affecting the leaves.

1. *Fungi affecting the Roots and Base of Trunk.*—The entrance of fungi into the roots of trees is determined to a large extent by the conditions of situation and climate. Where the tree has been weakened by any of the physiological causes discussed in the February number of this magazine, the roots are unable to prevent the development of those fungi which find an entrance into the tissues.

(a) *Tree Root-Rot.* (*Agaricus melleus*).—This destructive toad-stool is a very common fungus, not only on all kinds of fruit trees, but also on the forest trees, shade trees and conifers. The cap of the toad-stool, when full grown, is two inches across, and has a honey color. The stalk is often four inches high, and the gills and spores are white. (Fig. 1770.)

The spores are distributed by the wind chiefly. On germination delicate, cob-web-like threads are produced, which soon form a blackish covering on the roots. The roots

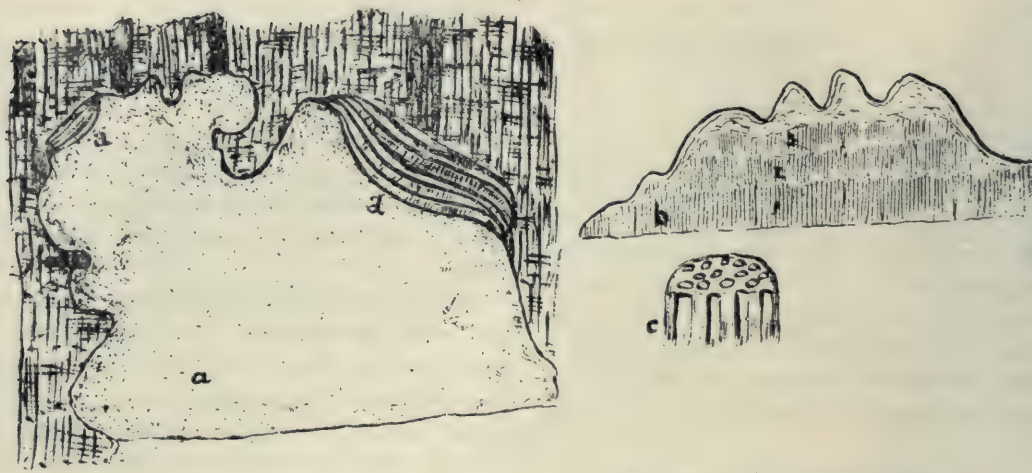


FIG. 1771. *Trametes radiciperda*, (Root-Rot of Conifers), *a*, part of a fungus showing the crust following the irregularities of the bark, and the two projecting shelves *d*, both composed of several overlapping shelves; *b*, a section of the crust showing the three layers or thickness of tubes 1, 2, 3; *c*, a portion of the spore-tube layer showing the tubes and their openings or pores slightly magnified. (After Masee).

are penetrated by the threads, which make their way between the bark and the woody part. Gradually the whole mass of tissue of the cortex of the root, as high as the crown, is literally choked with the fine threads, and the vital activities of the plant are seriously interfered with. During late stages of the disease I have frequently seen the surface of the almost dead roots covered with a matted, white felt of threads.

The fungus is not content to remain on a single tree, but will send out dark, radiating threads through the soil to the roots of other trees, which are attacked in a manner similar to the first.

Remedies.—From what has been already said it is evident that there are two sources of infection of trees: (a) by spores, and (b) by the fine black radiating strands underground. These two sources suggest two methods of treatment: (a) by preventing the formation of the spores on the gills of the cap, and (b) by isolating infested trees, for it is impossible to kill the fungus after it has once made an entrance into the roots. All

the fruiting forms, or caps, should be destroyed by burning. Infested trees, which are considered too valuable and healthy to destroy, should be isolated by a ditch about ten inches deep, dug around the tree. This will prevent the underground strands from reaching other trees.

The disturbances produced by the presence of fungal threads are far-reaching. The transpiration of water, when the leaves are affected, is seriously interfered with; the cells of the parts affected are gradually destroyed through the consumption of the cell-contents; and chemical changes are initiated which results frequently in the malformation, hypertrophy of tissues; and finally death ensues.

(b) *Root-Rot of Conifers.* *Trametes radiciperda*. (Fig. 1771.) This is a very common fungus on roots of conifers. The mycelium may pass from a diseased root to another close by which is not diseased, and in this way a single tree may infect a large number. On infection, the cells of the wood become brown, and white patches make their ap-

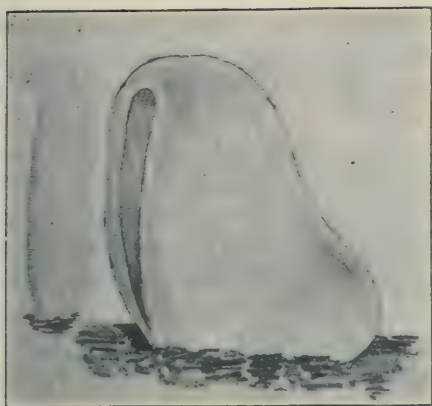


Fig. 1772. *Polyporus betulinus* (Birch shelf fungus), showing the horse-shoe shaped shelf. (After Massee.)

pearance. Flattish, fruiting structures form on the surface of the roots, while the shelf which appears on the roots and stumps resembles a white crust or cake, nearly an inch across. The upper surface of the little shelf is brown, and the lower surface is white. In all cases, save the Scotch pine, the disease soon ascends into the stem. Moreover, it is thought that mice and other burrowing animals assist in the dissemination of the spores.

Remedy.—As with *Agaricus melleus*, the shelves should be removed to prevent the spread of spores, and a ditch dug about the diseased tree to prevent the infection of the roots of neighboring trees.

2. Fungi affecting the Stems of Trees.

(a) Heart-wood Rots. (*Polyporus* sp.)

One of the most common objects seen in parks and woods is the large shelf-like fungus projecting from the trunks of both living and dead trees. The various species have quite characteristic shelves—e. g., the shelf on the birch is shaped like horse's hoof, that on the oak and willow is crispy and wavy margined, while other forms may be hemispherical. (Figs. 1772 and 1773.)

The heartwood is usually the first region injured, afterwards the sapwood. Where-

ever a crack or wound permits the thread of the internal mycelium to get to the surface, one or more of the shelves will be found. It is by means of wounds that the mycelium, produced by germinating spores, finds an entrance into the inside of the tree. In a few years the heart of a tree may become entirely rotten, but it is "usually several years from the time a tree is first attacked until its death." The majority of these shelf-fungi spread by means of spores liberated from minute pores on the under side of the shelf; while a few, like the root-rot fungus, spread chiefly by underground mycelia, "from tree to tree along decaying roots."

Remedies.—In the case of trunk-infesting forms, the fungous shelf ought to be destroyed whenever it is seen, thereby preventing the liberation of the minute spores. All broken branches, moreover, should be carefully trimmed and treated with some protective fungicide, such as tar. With root-infesting forms, where the mycelium crawls from tree to tree by means underground, decaying roots, it becomes necessary to remove the cause of the spread. The earth at the base of the tree may be freed from all decaying roots, and all injuries carefully treated with tar.

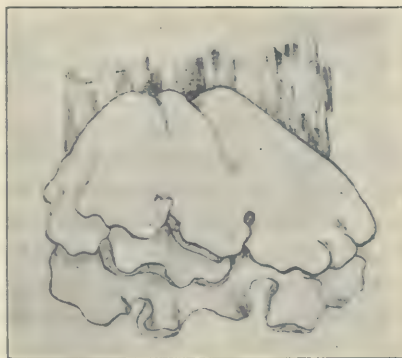


Fig. 1773. *Polyporus sulphureus* (Heart-wood Rot), showing the irregular and wavy margin. (After Massee.)

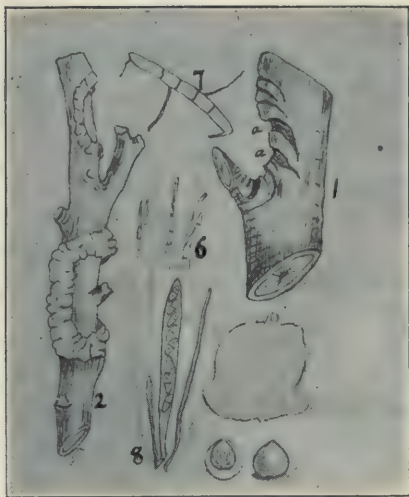


Fig. 1774. *Nectria ditissima* (Apple-tree Canker); (1) a branch recently attacked, the disease entered at the axil of the small branch, a perithecia; (2) a branch diseased for some time, showing the rugged, raised margin about the wound; (6) conidia spores; (7) germinating conidium-spore; (8) ascus containing spores—the asci are contained in the perithecia. (After Masee.)

(b) *Cankers* (*Nectria* and others).—The cankers are not nearly such conspicuous objects as the shelf-fungi. Some of the cankers have dark colored fruiting forms, while others have bright red forms. Nearly every kind of forest and shade tree is liable to infestation by these fungi, and the infested trees are sources of rapid spread of the disease to the other trees of the park.

The most common cankers are the *Apple Tree Canker*, *Spruce Canker*, *Larch Canker* and the *Coral Spot Canker*. (1) *The Apple Tree Canker* (*Nectria ditissima*) is very frequently found on the common forest and shade trees. Gaining an entrance through a wound, the mycelium attacks the bark, which it destroys in a characteristic manner. As the bark cracks concentrically, the area of diseased portion gradually enlarges, so that sometimes the trunk is completely girdled. Usually the diseased area is surrounded by a thick, irregular margin, which is also quite charac-

teristic. In late fall whitish cushions of mycelium come to the surface, and produce minute spores, while in spring bright red cavities appear, containing the asci and spores. Fig. 1774).

(2.) *The Spruce Canker*, (*Nectria cucurbitula*), is chiefly found on the spruce. The fungus gains an entrance through a wound, and attacks the tissues of the cortex and to some extent the wood. When the bark becomes moist the mycelium may come to the surface and produce minute spores, and later in the season red perithecia are formed, and spores are liberated from asci.

(3.) *The Coral Spot Canker*, (*Nectria Cinnabarina*), is often seen on maples, horse-chestnuts, and red currants. This fungus is most commonly found on dead twigs and branches, where the bright coral-like warts are frequently very conspicuous. Like the spruce-canker the spores germinate on being brought to a wound, and the mycelium makes its way into the tissues beneath. The coral warts are not observed until the death of the twig.

(4.) *The Larch Canker*, (*Peziza willkommii*). (Fig. 1775). In low-lying regions the larch is frequently attacked by this fungus, which has found an entrance through some wound. The presence of resin on the diseased twigs, oozing from cracks in the bark, and yellow, wilted leaves reveal the progress of the disease. The spores are formed in asci sunken in the infested spots. Year after year the canker spot enlarges, and soon girdles the tree. The fungus may be readily recognized by the saucer-shaped fruiting area; the internal part of the saucer being orange-red, and the outside white and downy.

Remedies.—Since all these cankers are wound parasites, it is necessary to keep a strict watch on all our shade trees for wounds. Whenever they are found they should be dressed with a solution of green

vitriol, and afterwards with a coating of tar. It is also very essential that diseased twigs be removed as soon as seen, and that the fungus be not allowed to produce spores.

(c) *The Pine Fungus*. (*Trametes pini*.) (Fig. 1776). — When fully developed this fungus is readily recognized as one of the shelf-fungi (Polyporids). — The shelf is irregularly triangular in form, two or more inches across, of a reddish brown color, and with the cap concentrically grooved. As ordinarily observed the fungus is characterized by white blotches or expansions on the bark, and by the reddish-brown color of the diseased wood.

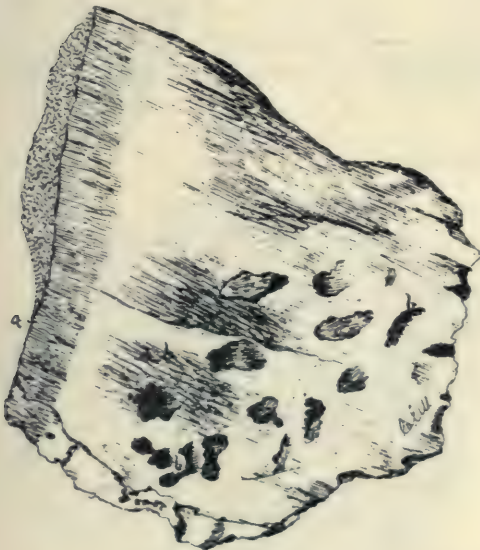


Fig. 1776. *Trametes pini* (Pine Fungus). A section of diseased wood, (a) the pores in which the spores are produced, (b) the affected tissue which is saturated with resin and partially decomposed. (Original).

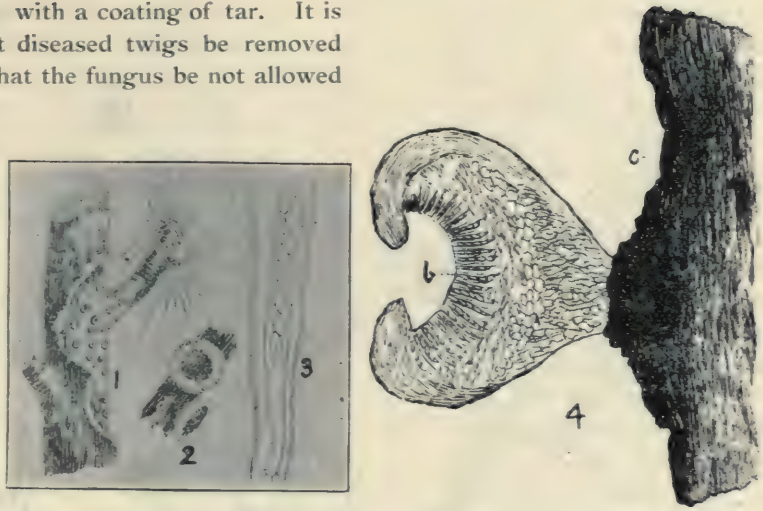


Fig. 1775. *Periziza willkommii* (Larch Canker). (1) showing a portion of a branch diseased, (2) two apothecia slightly magnified, (3) an ascus containing eight spores, (4) a section of an apothecium greatly magnified, showing the asci and spores in them (b). (1, 2, 3 after Massee, 4 original.)

Inasmuch as the mycelium gains access to the tree through wounds, and the external portion does not make its appearance until the mycelial threads are very numerous within the tissues of the tree, it is the duty of the owner to treat all wounds immediately on discovery, and to remove all trees which show any outward signs of the disease.

(d) *Pine Cone Fungus* (*Peridermium pini*) (Fig. 1777). This fungus is quite a common form on pines in Ontario. A characteristic feature of the diseased condition of the tree affected is the "resin top," caused by the death of the upper branches through the stoppage of the upward current of sap in the wood. The mycelium is perennial, i. e., growing on from year to year. Cells which are attacked lose their normal content, and secrete turpentine to such an extent that resin frequently overflows from cracks in the bark. Much irregularity in the growth of the trunk of the tree results from the destruction of the cambium. The stage of the fungus which is found on pines is the "aecidial" or cluster-cup stage, appearing in early summer

as sausage-shaped swellings filled with spores. (Fig. 1777).

Remedy.—The only available remedy is the destruction of the tree, so that the disease may not spread to other trees.

(e) *Cedar Apple and Apple Rust* (*Gymnosporangium* and *Roestelia*). (Fig. 1778). It is well known that certain stages in the life of the rust of wheat (*Puccinea graminis*) are passed on the wheat and the other stage on the barberry. The parasite which causes "apple rust" passes part of its life on apple leaves as *Roestelia*, and the other stage on the cedar or juniper as *Gymnosporangium*. Nine species are known in this genus: two on white cedar only, three on red cedar only, two on both white and red cedars, one on the common juniper, and one on the western juniper (*J. occidentalis*). The mycelium is perennial in most species, and the abnormal growths depend to a certain extent on the part affected and the rate of growth of the fungal threads. Growths on the affected leaves are called "cedar apples." (Fig. 1778).

Distorted branches are very common forms of the disease, and are known as "witches' broom." The resting spores produced on the cedars and junipers, under favorable conditions, germinate and soon liberate spores of a slightly different nature. These, falling on the leaves of the apple, produce the "apple rust."

(f) *Lichens.*—Lichens are extremely common on all kinds of trees. They form incrustations on the bark, and may be either



Fig. 1777. *Peridermium pini* (Pine Cone Fungus), (a) leaves of pine affected with this disease. The cluster cups occur as orange yellow blisters and contain the spores. Spermatogonia (b) appear as black spots. (B) shows a branch which has been killed and which bears cluster cups. (After Massee).

leathery or semi-gelatinous in texture. It is conceded by most authorities that the lichens do not get their nourishment from the trees they incrust, but use their position on the bark as a means of getting a better livelihood from the air. The surface of the lichen is specially adapted for absorbing dew, rain or

mists very quickly, and their food materials are obtained from the air and the moisture which reaches the plant. Mineral salts are brought to the lichen by the dust in the air, and probably also by the dead bark or the decaying leaves on the bark. Lichens are really dual plants, composed of fungi and algae—the fungi holding the algae as slaves in the mesh-work of the hyphae. The algae, containing chlorophyll, can make organic food out of the inorganic materials at their command, while the fungus can feed upon the organic food thus prepared. (Fig. 1779). It is very evident that the lichens which incrust the

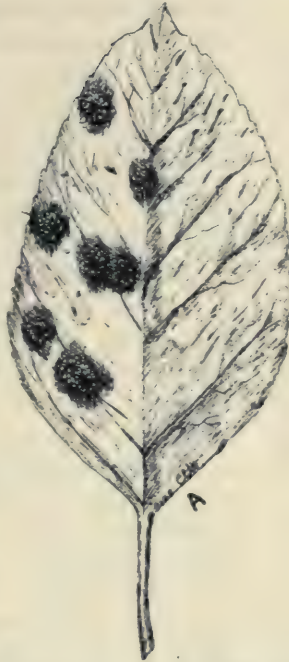


Fig. 1778. A, *Roestelia pirata* on apple leaf; (1) aecidia or cluster cups containing aecidiospores. B, *Gymnosporangium macropus*, (1) the cedar apple showing the yellow horns containing the teleutospores or winter spores.



Fig. 1779. Lichens.

bark of a tree do much harm in that the breathing pores of bark are closed and oxygen is unable to get access to the interior cells. This loss of oxygen is of vital importance to the healthy working of the tree, and all shade and fruit trees should be kept well cleaned. Careful scraping will do much good, but perhaps the best remedy is the application of some strong caustic, such as whale oil soap (2 lbs. to a gallon of water in winter) or fungicide, as Bordeaux mixture.

3. Fungi affecting the Leaves.

(a) *Maple Leaf Blotch* (*Rhytisma acerinum*). (Fig. 1780.) Frequently the upper surfaces of the leaves of maples contain large black patches of a fungous nature. These patches make their appearance in June, and are then yellowish in color, but a little later they turn black and thick, forming a sort of scab, due to the fact that the mycelium becomes hard and dense. During



Fig. 1780. *Rhytisma acerinum* (Maple Leaf Blotch) showing the sclerotium spots, (a) on a maple leaf. These sclerotia become wrinkled and contain the apothecia with the asci and spores. (Original).

the winter, spores are produced in cavities called *asci*, and in the spring they become mature and are liberated. In this way the infection is carried to trees in the neighborhood.

The only practicable method of preventing the spread of this fungus is to gather up and burn the leaves before the spores are set free in the spring.

(b) *Pine Leaf-Cast* (*Lophodermium pinastri*). (Fig. 1781.) Sometimes the leaves of young, seedling pines fall prematurely, and, if the leaves are examined, small, oval, black spots may be seen. These are the masses of *asci*, each containing eight spores, which rupture only after long-continued wet weather. In some of the islands of the Muskoka lakes large areas of young pine trees were completely defoliated during the summer of 1899 by this fungus.

No remedial treatment can be suggested

for this disease, especially after the mycelium has gained an entrance to the inner tissues.

Summary.—Shade-trees are liable to attacks from many quarters. Not only are insect enemies plentiful, but fungous enemies are even more abundant, and await the first favorable opportunity to make the attack. These opportunities come quite frequently during the life of an ordinary shade-tree. They come when outside conditions are unfavorable to the healthy working of the organs of the tree, when, for example, the food supply is inadequate, the drainage poor, or the water supply extreme. The tree becomes weakened, and in its weakened state cannot ward off the host of invaders. Wounds, brought on by storms of wind or hail, when portions of the bark are bruised, or branches torn off, form very suitable places for the entrance of both fungi and insects. In every case this old adage, "a stitch in time saves nine," holds true, and frequently a little labor at the outbreak will not only save a great amount of labor later on, but also, perhaps, the life of the tree.

The chief insect and fungous enemies of shade trees have been discussed as fully as

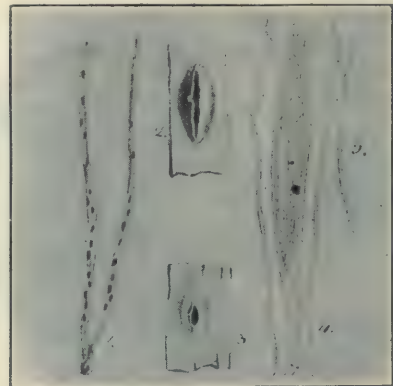


Fig. 1781. *Lophodermium pinastri* (Pine Leaf Cast, (1) leaves with the fungus. Within the apothecia are the club-shaped *asci* which contain the spores. (After Massee).

space would permit, and it must be inferred that the enemies are numerous. The owner who takes great care of his trees—along the lines laid down in these articles—will be abundantly rewarded in seeing his trees “things of beauty and joys forever,” while his careless neighbor will probably be lamenting his “hard luck.” Shade trees must be treated as living, organic beings—fed with

abundant nutritious food, and cared for by attending to their wounds—if they are to furnish that refreshing shade in summer, that peculiar beauty all their own, and that protection from the blasts of winter, which are so much to be desired.

WM. LOCHHEAD.

M. W. DOHERTY.

Ontario Agricultural College, Guelph.

CAPE COLONY A FRUIT COUNTRY.

IT WOULD appear that this land of favored climatic conditions has solved the question of shipping tender fruits to Great Britain, and bids fair to have the most excellent success. The Gardeners' Chronicle gives the following note, viz. :

“During last month there were several arrivals from the Cape, per the Union line, the first, per the Dunvegan Castle, a small consignment of peaches, which sold well. The second, per the Guelph, was twelve cases of peaches, in fine order, which sold well. The third ship was the Norman, with 704 cases of fine plums, and 33 of peaches. There was a splendid bloom on the plums, all of which were quickly taken off, at good prices, as also were the peaches. Tantallon Castle arrived on the 3rd inst., brought 392 cases of plums, 141 cases of grapes, and 138 cases of peaches. Plums, some were Simoni, large red, in good condition, boxes of 24 running up to 12s. per box. Others were Golden Drop, fair sized yellow, also in good condition, going as high as 12s. per box of 24. Grapes were small, and slightly hard. They were the first consignment of the season, and must have been picked too early. They were practically given away at Covent Garden, 2d. per pound

being the highest price. This shows that care must be taken to send home only fruit in good condition and thoroughly ripe. This lot of grapes were brought home by a passenger who must have little knowledge of the trade. Peaches : Some were in capital condition, running up to 12s. per box of 24. N. B.—All the above fruit was sold privately at Covent Garden, not by public auction. Some peaches were sold at public auction, and, although first-class fruit, realized very low prices. The result does not seem to recommend the public auction sales. The last arrival to note here is that of the ss. Mexican, which arrived on Sunday, 11th inst, bringing 196 cases of peaches, 290 boxes of plums, 102 boxes of nectarines and 60 boxes of grapes.”

Of course these fruits from South Africa will not compete with ours, because their summer is our winter ; but if they can succeed, and cross the tropics, why can we not succeed with less distance and cooler air ?

There is no doubt a great deal of truth in the point made about the private sale of the goods. Ours are always sold by public auction, and this may count against our best success, especially while our goods are looked upon as novelties.



FIG. 1782. LODGE AND ELM AVENUE, CENTRAL EXPERIMENTAL FARM, OTTAWA.

CENTRAL EXPERIMENTAL FARM NOTES—No. 6.

THE weather has been very changeable this winter, so changeable in fact that there have been few instances where two days of the same kind of weather followed one another. At no time was there much over a foot of snow on the ground until quite recently. About the third week of January there was a thaw with heavy rains, at which time nearly all the snow disappeared, just enough remaining to make bad sleighing. The lowest temperature of the winter occurred on the 2nd February, when the thermometer registered 21.5° below zero. There was very heavy rain during the second week of February, followed by frost, and from the 16th to the 22nd February there was ice everywhere. Snow on February 22nd and 24th, was followed on the 25th,

26th and 27th, by very cold weather with high winds, the temperature on the 26th being 19° below zero, and on the 27th 18° below. Up to the 1st March there had been comparatively little snow at one time during the winter, but on that day and the next there was a downfall of 18 inches, followed on the 6th by six inches more.

NUT GROWING FOR PROFIT.

As a correspondent desires to get some information regarding nuts which were hardy in the colder parts of the province, the experience gained in growing nut trees at the Experimental Farm is given this month. It is not likely that nut culture will ever prove a profitable industry in Ontario, unless some of our native nuts are improved by cross-breeding or selection, so that they will com-

pare favorably in thinness of shell and large proportion of kernel with foreign kinds. Few nuts have a finer flavor than our shell-bark hickory and butternut, but in their present condition they are not easily cracked, the kernels are rather difficult to remove, and the proportion of shell is too great. There are already, however, in the United States some improved hickories, which have much thinner shells than the ordinary form. The wood of both hickory and butternut is very valuable, and if these two trees could be planted for their nuts, as well as for timber, they would prove even more valuable than they are now. Both of these trees are quite hardy at Ottawa, and although the shell-bark hickory does not grow naturally here it succeeds well when planted. It is a slow grower, being different in this respect from the butternut, which makes a rapid growth.

It is not likely that the black walnut will ever be improved enough to make it valuable for its nuts. It is quite possible, however, that hybrids between this tree and the Persian or English walnut (*Juglans regia*) would produce fruit of good quality and prove hardy in the northern parts of the province. One hybrid between these species, *Juglans Vilmoriniana*, planted in 1897, is quite hardy so far. The English walnut is not hardy at Ottawa, killing back nearly to the ground every year, but the black walnut is perfectly hardy, producing nuts when from nine to ten years of age. Two years ago, however, nuts of the Persian or English walnut were procured from the mountainous districts of Turkestan, where this nut is grown on a commercial scale, and where

the winters are very severe. Yearling trees came through last winter without killing back, but they were well protected with snow. It will be interesting noting how this winter affects them. A Japanese walnut (*Juglans sieboldiana*) is perfectly hardy at Ottawa, and bears nuts when from eight to ten years of age. They are of good flavor, very much resembling in this respect our native butternut, but the proportion of kernel is so small that they are of no commercial value here.

The European filbert or hazel nut (*Corylus avellana*) does not succeed in the colder parts of Ontario, nor will it set fruit in the more favored parts of the province. At Ottawa the wood, in many cases, kills back, but there are specimens growing here which are almost hardy. The reason why the nuts do not set is that the pollen from the male flowers is shed before the female flowers are in a condition to receive it, the result being that the latter are not fertilized and no fruit forms. We have, however, two good hardy native hazels in Canada, *Corylus rostrata* and *C. americana*, which produce nuts of good quality, and which possibly may be improved.

The American sweet chestnut (*Castanea dentata*) is not perfectly hardy at Ottawa. A few trees, however, out of many tested are quite hardy and have flowered and produced nuts, but no kernels were developed.

It would be an interesting work for someone to try and improve our hardy nuts by selection and hybridization.

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Central Experimental Farm, Ottawa.



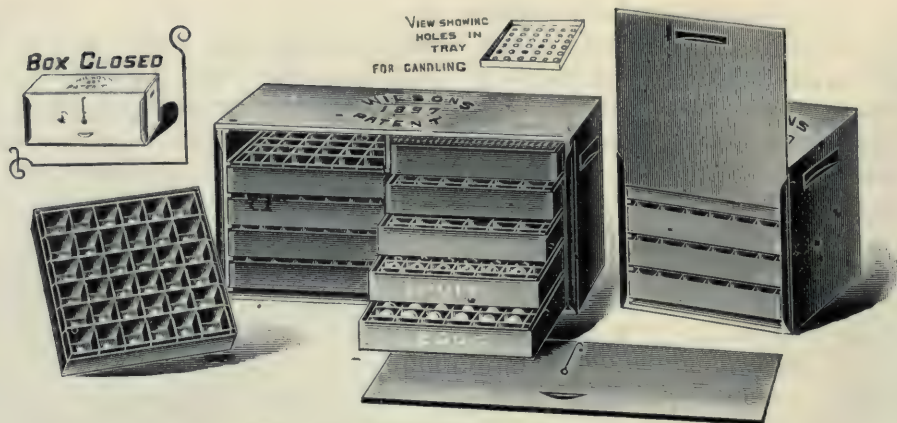


FIG. 1783. THE WILSON FRUIT CASE.

INGENIOUS PACKAGES.

THE agitation over inspection of fruit packages has given rise to several new inventions of packages adapted for the purpose. The barrel is notorious for being packed fraudulently, and cannot

be inspected without emptying out the whole contents, and for these two reasons a different package for high grade stock is being proposed. In our regular shipments we have been using a bushel case 24 x 12 x 12 scant, which when filled weighs about 55 lbs., and holds about four layers of $2\frac{3}{4}$ inch apples, of four apples wide and eight long, or in all 128 apples.

During the winter just passed two new fruit cases have been patented, one by Mr. E. H. Wartman, of Kingston, the inventor of the fruit grader and which is shown in Fig. 1784, which affords an easy method of removing each layer on its tray and replacing the whole without disturbing them. Mr. Wartman writes, "I forward you a photo of my new patent fruit box, known as Wartman's Safe Shipping Fruit Box. It has two points worthy of notice, (1) every apple or pear can be inspected in five seconds without disturbing one apple or pear. (2) The reversible padded trays keep the fruit from bruising, as each apple is slightly imbedded in a pad, which also acts as an absorbent of moisture."

The other fruit case has been invented by Wm. Wilson, of London, Ont., the inventor of the well known egg case, and the differ-



FIG. 1784. THE WARTMAN FRUIT CASE.

ent forms and trays with fillers are well shown in the accompanying engraving.

The special features claimed for this tray are the convenience of inspection, and perfect carriage of fruit. Mr. Wilson, the inventor, writes of it, "Cases will be made of various sizes to suit the apple trade. It will be observed that fillers are used to keep each apple intact in its own compartment. The size of the filler determines the size of the case, it is intended to make the fillers $2\frac{1}{2}$ inch cube, $2\frac{3}{4}$ inch cube and 3 inch cube, putting eight fillers and trays in each case, and as each tray and filler holds 25 apples there will be 200 apples in each case, and it is estimated that this case complete can be sold to shippers in quantities at 50 cents each. I think the various advantages of my case will speak for themselves, especially the convenience for instant inspection of all contents: and as the Dominion Government are now contemplating official inspection of all export apples, I trust the merits of my case will be somewhat more appreciated than in the past, for both egg and fruit shippers have been against me because my case showed up everything. The trays and fillers have been hitherto made of ordinary stiff strawboard and cardboard, but we will now

try and supply some of the best moist-proof, odorless spruce-fiber."

These cases seem to evidence a move in the right direction, and when we have tried them we shall be able to give some definite opinion as to their suitability to the purpose. We must however object to any apple or pear package holding over a bushel. For a larger package than a bushel the barrel cannot be supplanted, but for the retailer of choice samples an attractive box holding from 20 to 50 pounds of fruit, easily lifted and carried about, is the thing wanted.

Whether these packages are too high priced is an important question. Packages already eat up a large portion of the fruit grower's income, and we must decidedly object to any increase in this direction. The ordinary bushel box without partitions costs only 11 cents, and the wrapping paper only three cents, so that is only about 14 or 15 cents a bushel, or little more than the barrel. Possibly for some extra fancy Wealthy or Snow apples a higher priced package might be indulged in if it met a proportional high class trade, as indeed the Cochrane fruit case seems to have done, a case that is more expensive than the Wilson case.

THE CODLING MOTH.

Brothers, in Green's Fruit Grower, gives the following as his experience in combatting this enemy, and it will be interesting to us in view of our own efforts to stop its ravages:

Having stored large quantities of apples in his cellar he has attempted to destroy the codling moth that may have remained in the barrels, or that have escaped in the cellar, by burning sulphur, but concludes that this sulphur burning did no good. He thinks boxes and barrels in which apples have been wintered should be scalded before using again.

He has sprayed his orchards with one pound of Paris green to 200 gallons of water. The first

time, May 31st to June 3rd, beginning just as soon as the blossoms have fallen. The second time he sprayed June 13th to 16th, and the third time June 24th to 27th. He also puts bags and sacks on the trees the first week in June and took them off for the first time July 4th, and caught 200 worms from 750 trees. The second time he took off the bags July 15th and caught 997 worms. He took the bags off again August 2nd and August 12th, also August 22nd and September 6th, catching the most worms the last time the sacks and bags were removed, but caught a large number at each removal. The last time he took the bags off, which was the last week in September, he found 2,315 worms. He has so far relieved his apples of the codling moth, whereas formerly, without treatment, about 90 per cent. of his apples were wormy; now 90 per cent. of his apples are free from worms.

THE QUEBEC FRUIT GROWERS.

SIR,—Permit me, as the delegate from the Ontario Fruit Growers' Association to the Pomological and Fruit Growing Society of the Province of Quebec, to give your readers a brief report of my visit.

The meeting was held this year in the beautiful and prosperous town of Granby. The attendance from a distance was very good, but for some reason there was not much interest shown by the townspeople. I have learned that in former meetings the attendance has been large.

The Society, unlike our own, holds a summer meeting, which allows the members to become acquainted with the fruit growing and fruit growers of various parts of the Province. The number of members is small compared with ours—about 100. They have no periodical such as the *Horticulturist*, owing to the fact that such a work would need to be printed in two languages, which would make it too expensive. Thus they have no common medium of exchange of ideas except their two annual meetings. They have not yet our splendid local horticultural societies to increase their membership.

Though thus handicapped, still the Society is doing a splendid work, and is full of enthusiasm. The papers read, and the discussions carried on showed that they were not a whit behind the Ontario Society.

Your representative was most cordially received, and your fraternal greeting warmly reciprocated.

They appointed a committee to consider the resolutions passed at our Whitby meeting re the packing, grading of fruit, and the marking of packages.

They reported favorably, but suggested some variations in the marking of packages.

The sessions were made interesting and profitable by the presence of Prof. Waugh,

of the Vermont Agricultural College, Prof. Macoun and Prof. Fletcher of Ottawa, and Prof. Penhallow of McGill.

Some of the good points made by the speakers are following: 2% of Bordeaux mixture will destroy mustard without injuring the grain. J. C. Chapais has the most northerly orchard in Canada, at St. Denis. He can grow Fameuse, St. Lawrence, and many others; also better cherries than Montreal. The Trabische is his hardiest plum. The white Alpine straw berry bears fruit from June 15th to October 15th. His Alexander apples were the largest sent from Canada to the Paris Exposition. W. Craig, jun., spoke on roadside trees. He would plant our own native trees, and not closely together. He would advise trial planting of walnut trees. Roadside trees raise the price of the land, and provide shelter from winds.

Prof. Penhallow gave a valuable paper on the History of Horticultural Societies in the Province. 1854 saw the formation of the first society at Montreal, and 1875 its revival. Chas. Gibb was the first promoter of fruit culture in the Province.

Mr. Thomas Slack, in his paper on "Intensive Cultivation," advised good seed, good soil and good cultivation. Weeds are the lazy man's friend, because they compel him to cultivate his crop. He finds it profitable to raise lettuce in winter under glass for the Montreal market.

Mr. Brodie, in his paper on "The Culture of Celery," said that he raises the White Plume, and does not plant in trenches. He does not cover the crowns. The pink and red varieties are best in quality. For wintering the dwarf is the best.

Mr. Grindley and Mr. Shepherd, who have had extensive experience in shipping fruit to the British market, gave some valuable in-

formation on best kinds to ship, and how to pack. Barrels with straight staves, or boxes should be used, whereby slackness and bruising would be avoided. The engineers, who control the temperature on shipboard, do not honestly keep their log books of the temperature. Butter is often put in same hold as fruit. Butter requires 26° of cold and apples 34°. The fruit becomes chilled, and even frozen, and when landed looks well, but soon rots. Hay also is put in same hold as apples, causing mould. An inspector should be sent with each fruit vessel. Ship but few kinds and in large lots, as California and Nova Scotia do.

Prof. Waugh spoke on "Horticulture in Literature." He gave an exhaustive ac-

count of the subject, embracing all the classical writers, such as Hesiod, Virgil, Pliny, etc., and the best modern writers, such as Fessenden, Cobbett, Henderson, Bailey, etc. He spoke very highly of our "Horticulturist."

Prof. Macoun said that spraying should be specially done in years when the crop is small, or when insects are few, for then the rings and eggs of tent caterpillars are smaller and fewer from want of food.

Extreme cold does not affect insects.

The plum curculio affects apples in Quebec.

The remedy for the borer is soap wash in June.

For the apple maggot, pick up and destroy fallen apples.

SUMMARY OF FRUIT GROWING AT ABBOTSFORD, P. Q.



BBOTSFORD is situated at the base of the Yamaska Mountain in the County of Rouville, P. Q., about forty miles east of Montreal, and for many years has been noted for its fruits both at home and abroad, which thrive in a porous, gravelly soil naturally adapted to the apple, on the slopes of the second trap mountain east of St. Hilaire.

No doubt the early settlers brought with them cuttings of their choicest plants and vines, and seeds of their favorite fruits as a nucleus of the family garden and orchard, which are numerous; numbering many commercial orchards containing most of the hardy varieties of the apple, pear, plum, cherry, grape and other small fruits which it is possible to grow in a climate where vegetation is liable to be injured by frost during nine months of the year.

The first seedling orchard at Abbotsford was planted by one Joel Frizzle, of about one arpant in extent, and it came into bearing in 1812, or earlier.

The first grafted trees were brought here

in 1810, by the late Col. O'Dwyer, and consisted of three varieties; the Blue Pearmain, Late Strawberry or Foundling, and a Flat Graft, an apple of good quality whose name was lost. These trees were procured from the Spalding nursery at Shefford Mountain, the scions of which came formerly from the New England States.

The Fameuse, Pomme Grise, and Bourassa, were brought from Montreal in 1826 by the late Rev. Joseph Abbott. Grafting was introduced in 1823 by the late Samuel Jackman, and the art of budding in 1846 by the late Rev. Thomas Johnson.

The first regular commercial nursery was established in 1857 by N. Cotton Fisk, and some others followed on the same lines, when the Abbotsford grown trees were much sought after by planters, and now at the close of the 19th century forms the foundation of many a valuable orchard through the Province of Quebec.

The Fruit Growers' Association of Abbotsford was organized in December, 1874, and may be styled the pioneer society, as it was

the first county, or local organization of the kind in the Province. In 1875 it published after much correspondence and discussion with over a hundred persons, exclusive of Abbotsford, the first fruit list of the Province of Quebec, containing much valuable information as to the best and hardiest varieties of the apple, pear, plum, cherry, grape and other small fruits adapted to our climate. It held its first exhibition on September 20th, 1876, and after holding three exhibitions, and publishing a fruit list at considerable expense, it received its first Government grant of fifty dollars in 1879.

In 1884 importations were made by the Society of Russian apple trees, from the North Western States, and also Russian and North German pear, plum and cherry, from the Academy at Petrowskoe Rosumowskoe, near Moscow; from this last importation all available scions were cut and set upon root grafts, and during the period between the years of 1884 and 1890, no less than 1285 trees were distributed to the members, and as these were necessarily planted on a variety of soils, entailing different exposures, each member practically became an assistant in testing these new fruits, which in most cases have proved more hardy and productive than many of the old varieties, though often lacking in quality and keeping propensities.

In 1893, application was made by several of the leading fruit growers of the Province of Quebec to the Provincial Legislature to incorporate a Provincial society under the name of "The Pomological and Fruit Growing Society of the Province of Quebec," which was granted by the Government in January, 1894, when a meeting was convened and held at Abbotsford on the 8th and 9th of February, attended by delegates from different parts of the Province, as well as from the Experimental Farm, Ottawa. Mr. J. M. Fisk was moved to the chair, and after some discussion it was deemed but just to

Abbotsford that the first president should be an Abbotsford man, consequently the mantle fell upon the chairman. A committee was named to divide the Province into nine electoral districts, after which a Director was elected to represent each district, a constitution adopted, and many interesting papers read, which brought out animated discussions. The Society is still carrying on the good work, holding a summer and winter meeting in different parts of the Province; and as the transactions of these meetings are reported, and published by the Government in both the English and French languages, they form a source of great value from an educational point of view, and should be in the hands of every fruit grower and farmer of the Province.

Cider making has been in vogue here for upwards of seventy-five years, bringing into use almost every known device for crushing and pressing the apple, from the old sweep cog-roller and lever cheese press to the most modern horse-power fluted roller and screw press; and for family use, the improved Buckeye hand press mills.

In 1897, Mr. Robert Gillespie erected a cider and vinegar plant, introducing the "Gould Generator," quick process system for making vinegar, and with "The 20th Century Multiple Filter" a superior quality of vinegar is manufactured and placed upon the market.

In 1898, petition by the Society was made to the Government for a special grant, and the privilege of using its funds for that year, (instead of holding an exhibition) to co-operate towards the erection of a Parish hall in which the Society could hold its meetings and exhibitions, which was granted, placing the Society in a position heretofore not enjoyed.

Spraying was introduced in 1888, and is still followed by most of our growers with beneficial results in combating both the fungous and insect pests; and by this means,

with good cultivation and pruning, our fruits are classed among the best, and find a ready sale both for the export trade and home consumption. And it also places them in the first ranks upon the Exhibition tables of the world, having appeared from time to time on most of the Exhibition tables of the Province, as well as upon those of the Centennial at Philadelphia in 1876, the Intercolonial and Indian at London, England, in 1886, the World's Fair in Chicago in 1893, and now, at the close of the 19th century, we hope to be creditably represented at the Paris International Exhibition of 1900.

It would be unseemly to close this summary of the fruit interest of Abbotsford without referring to the late Chas. Gibb, who for seventeen years was the leading spirit and promoter of the fruit interest of the Province.

Mr. Gibb first visited Abbotsford in 1872, and so pleased was he with the impetus already given to fruit growing, that he decided to throw in his lot with us, and purchased a farm of 120 acres favorably situated for orcharding, upon which he settled in March, 1873, and at once entered upon his new field of labor with the zeal of an enthusiast.

Being possessed of considerable means he

was enabled to carry out many a well formed plan of travel, through which he introduced many varieties of new fruits, as well as species of ornamental and forest trees, having at one time on trial no less than 145 varieties which were not natives of this Province; the survivals of some of the hardiest of these adorn our roadsides as shade trees at the present day.

His grounds were also turned into an experimental testing station for almost every conceivable variety of fruit which could possibly be grown in northern climates; and his many writings on fruit and arboriculture are accepted as authority from one who knew whereof he wrote. Besides visiting most parts of Canada and the U. S. A., always with the fruit interest in view, he twice visited Russia and Northern Europe. First in 1882, in company with Prof. J. L. Budd, of Ames, Iowa, and again in 1886 alone. In June, 1889, he left on a tour of research around the world via Vancouver, Japan, Hong Kong, Ceylon, Calcutta and Bombay; and while at Cairo, Egypt, was seized with a fatal illness and died on the 8th March, 1890, thus ending a life patriotically spent in the interest of his country.

Abbotsford, Que.

J. M. FISK.

DISTANCE BETWEEN TREES OR PLANTS IN PLANTATIONS.

Standard Apples, 30 to 40 feet apart each way. In poor soil, 25 feet may be enough.

Standard Pears and Cherries, 20 feet apart each way. Cherries will do at 18 feet, and the dwarf growing sorts, Dukes and Morellos, even at 16 feet.

Standard Plums, Peaches, Apricots, and Nectarines, 16 to 18 feet apart each way.

Quinces, 10 to 12 feet apart each way.

Dwarf or Pyramidal Pears, Cherries and Plums, 10 to 12 feet apart each way. The greater distance is better where land is not scarce.

Dwarf Apples, on Paradise stock (bushes) 6 feet apart.

Currants, Gooseberries and Raspberries, 3 to 4 feet apart.

Blackberries, 6 to 7 feet apart.

Grapes, 8 to 10 feet apart.

LANDSCAPE GARDENING—IV.

IN the making of fine gardens and the arrangement of decorative plants, more particularly those which are used for a summer decoration, there is room for a new profession, which even now is practiced, but is not distinguished from the practice of the landscape architect. It requires a thorough knowledge of this very large class of decorative plants, with the skill and taste necessary to make brilliant, yet refined and artistic, combinations, not only harmonious in themselves but harmonizing with their surroundings. Such a profession has already been called ornamental gardening. It is not gardening in the sense of growing of plants. To have the knowledge and skill to grow the many plants and their varieties now cultivated, and at the same time to keep up with the new introductions, will tax the resources of a very active brain; there are few that can do it. Many gardeners are skilful in arranging combinations of garden plants; perhaps some of them would be more successful at ornamental gardening or designing than at gardening. It is certain that there are landscape gardeners, and probably already ornamental gardeners, who cannot successfully grow all, and perhaps can grow only a very few, of the plants they use.

There are fashions in gardens and fashions in plants, and too often a plant is considered essential because it happens to be popular. The ornamental gardener who is working for an artistic result will not hesitate to use the commonest weed, if it furnishes just the shade, texture, or form that he requires—the common burdock perhaps, or silver weed.

The beautiful landscape of a park will never go out of fashion, and the landscape architect in producing such, uses plants as a painter uses his pigments in painting a picture. He paints in a broad way; the minutiae of detail of the garden and the lawn would not only be lost to the eye but would

very likely defeat the very object he is working for. With him the garden standard of value counts for little. Very common plants like the willows, cat-tails, and sedges, or even the common rhubarb, may make the foundation of a picture that will challenge the admiration of the critic and even of the multitude.

There is more or less fashion displayed in the planting of a lawn; it would be better if the vagaries of fashion were confined to the garden, and that the lawn should partake more of the character of a bit of landscape, or a grassy glade, or opening in the midst of shrubbery or wood, for it is not always that the breadth of view, which makes up a landscape, can be secured in or across a lawn. It should have a beautiful fringing of green, varying in texture, color, and outline, with a frequent glow and constant sparkle of flowers, with groups and fine individuals breaking out from the bordering masses, but not interrupting the open centre of the lawn, excepting to increase the appearance of distance. You would expect to use a larger assortment in the lawn than in a distant border plantation,—more exotics and more of the garden varieties having variations in flower,—but certain reliable varieties should predominate and establish a character for the planting which will be in keeping with the character of the place. The position of groups on the lawn will be governed by the views and by the topography of the ground. In general, elevations will be planted high and depressions low, or not at all, to increase their apparent height or depth. The planting would be arranged so that a slope would be away from it rather than toward it. A border plantation having an irregular edge with points and depressions, gives more opportunity for variety and more effects of light and shade than a straight edge. Groups and individuals would in general be used to

increase the prominence of the points—not to fill up the bays. In selecting plants, the greatest care must be taken not to select too large growing kinds for the places they are to occupy. A border plantation should be an irregular mass of foliage rather than a series of distinct individuals. To produce such an effect, thick planting is usually best, for a quicker result is secured; also a more natural and graceful outline, and less care and cultivation are required. The plants will thin themselves naturally, but it is, of course, better to do a little thinning and training every year to encourage the development of interesting details, but it should be done with a definite object in view. Unless this can be done in an intelligent manner under the close direction of some one who comprehends and is in sympathy with the design, it would be safer not to have it done at all. There is no good reason for trimming shrubs, as it is ordinarily done. Surely nothing could be more ugly than the broom-headed shrubbery which is seen on many lawns, both public and private. A decoration of fagot street brooms would be about as handsome as much of it. It is neither natural nor formal. If a place is adapted to a formal treatment, and is so treated, the selection of plants to be trimmed formally would not include an indiscriminate assortment of garden shrubs, but would be made up only of those that were adapted to this treatment. Too often men who call themselves gardeners are responsible for the almost universal mutilation and misplacing of shrubs, and I believe I am safe in saying that many who are gardeners are often guilty. It would seem that the gardener's training is directed toward making successful growers of greenhouse and garden flowers and vegetables, and that there is seldom acquired anything more than a very superficial knowledge of the commonest hardy woody plants and their treatment.

If the ground has been thoroughly prepared in the beginning and a good top-

dressing is given every winter, but little further cultivation will be required after the plants have become established and have grown sufficiently to cover the ground. There is no more occasion to tear up the surface, and with it the surface roots every spring with spade or fork, than there would be to tear up the surface of a beautiful roadside thicket to keep it in good condition.

Shrubs and small trees should predominate in a small place. That very large trees cannot be used to advantage should be evident to any one giving thought to the subject, yet you will see in the majority of places large growing deciduous and evergreen trees placed so near the walks or buildings that they will in a very few years become obstructions. Broad-leaved evergreens, while more expensive, are as a rule better and more permanent for a winter effect on a small place than coniferous trees. The best plants are those which are nursery grown. Wild plants of certain varieties, if properly handled, will transplant well, and produce a good effect, but without experience in handling such plants the result is likely to be unsatisfactory. It is very difficult to get native plants of many kinds in large quantities from the nurseries, and it is in this that the landscape architect can often help to good advantage, as it is usually part of his practice to keep informed as to where such plants can be obtained.

The employment of a trained gardener on a small or medium sized place is not practicable. Men offering themselves as gardeners at day laborers' wages are more likely to bring discredit than credit to a profession that requires for success, intelligence, enthusiasm, and a true love of the work. A good gardener loves his flowers and plants next to his family, and is as impatient of neglect and bad treatment of the one as of the other. Such a man soon finds and stays in a good position with fair pay,—not as much as his skill and intelligence deserve perhaps, but in many ways preferable to

other work where more dollars per day are earned. I believe it is safe to say that the majority of those who call themselves gardeners, who are drifting about and ready to accept a position at any price, are not safe men to have on a place. Their assurance is in proportion to their ignorance, and by taking advantage of the ignorance of their employers they can do more damage to a place than the proprietor himself could, however ignorant of gardening. For this reason I believe it is safer for him to employ a willing and industrious man who lays no claim to a knowledge of gardening, but who will do as he is told, and give him directions how to do the work on the place. If errors are then made, they will only serve to increase the knowledge and interest of the proprietor.

In this writing I have had in view small or medium sized home places especially. I have hardly touched on the service the landscape architect may be to the real estate owner in planning his property to avoid steep grades and heavy cuts and fills, in preserving and developing the natural features of the place, in so arranging the lots that each may be accessible and have as nearly equal advantages as possible, and in planting to utilize the material on the grounds; to the village, town, or city in designing public recreation grounds and the surroundings of public buildings, advising with regard to street tree planting or roadside improvement; to cemeteries in designing the grounds and their decorations; to public amusement resorts in providing a convenient and pleasing arrangement of buildings and grounds, laid out in a manner to educate rather than to degrade public taste.

Some information as to the methods employed by the landscape architect, or landscape gardener, in carrying on his profession may be of service to those who contemplate employing such assistance. Some make a charge for their plan, a profit on the men employed in superintendence, and also a profit on the plants used, which they supply

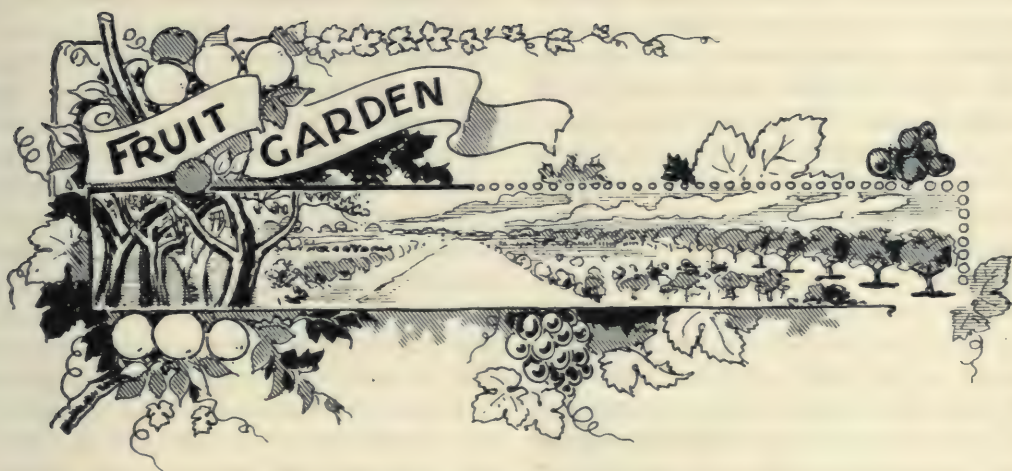
partly from nurseries of their own and partly by purchasing from other nurseries. There are others whose practice is the same, except that they have no nursery of their own or no personal interest in one. Others prepare plans and superintend the construction for a percentage of the cost, and still others contract for a specified sum to design, furnish all material, and construct a place. Where it is taken up as a profession purely, the practice is to make a charge for general design and report also for working drawings, estimates of cost and superintendence. Such charges are usually based on the difficulty of the undertaking rather than on the cost. On any purchases of materials that are made it is the practice to give the client the benefit of the lowest rates which frequent and often large purchases enable the landscape architect to procure.

Where a trained landscape architect is not available and the proprietor or any of his family has not the time or disposition to study into and direct the work, then the safest course would be to trust to your local florist, nurseryman, or contractor, securing from him an estimate of the cost in advance. You can hardly expect to get very artistic or original results, for the greater part of their time and thought must be given to the successful conduct of their business, of which this forms only a small department. It is very often to the local florist, nurseryman, or contractor that the landscape architect looks for his skilled assistance in carrying out the details on a place, under the direction of his trained assistants who are familiar with the plans and the results desired.

I believe the time is not far distant when the man who is to build a new place, or remodel an old one, and who wishes to secure the best and most economical result, will call in the landscape architect to help him plan the ground, as he now calls in the building architect to help him plan the building.

Boston, Mass.

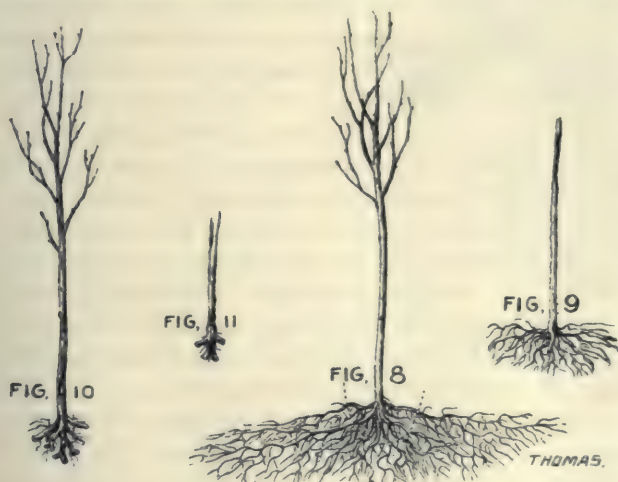
W. H. MANNING.



FRUIT CULTURE —III.

SELECTION OF TREES AND PLANTING. With all trees a medium-sized healthy tree with good fibrous roots is to be preferred to larger and older stock. If possible it is better to buy the trees from some reliable nurseryman in your

spect. Fig. 8 represents the tree as it stands in the nursery row. In Fig. 9 is seen a tree dug as it should be, with a fair proportion of the fibrous roots. Fig. 10 is an example of too many of the trees sent out, and Fig. 11 represents the worst form.

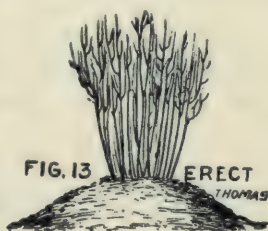
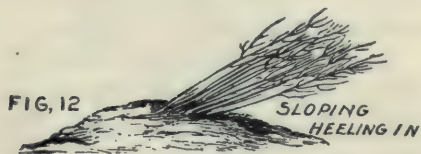


own locality. Trees will then not run so many dangers in transplanting, and the purchaser may often see them dug himself. It makes a considerable difference as to how trees are dug from the nursery row, and there is always gross carelessness in this re-

In Ontario generally, and with nearly all fruits, spring planting is preferable to planting in the fall. Most nurserymen, however, dig the trees in the fall, and the purchaser is often in a better position to buy them then, and they can be 'heeled in' for the winter with little trouble or risk. A place where the ground is mellow and well drained should be selected, the bunches of trees should be opened up and the earth well packed in among the roots. If mice are likely to bother, heel in the trees in an erect position in a sheltered place. Otherwise a sloping position as in Fig. 12 is better, with earth covering a good part of the stem.

When trees are received from the nursery in the spring they should also be heeled in carefully till wanted. Too many trees are lost from a neglect of this practice. Any

trees received with very dry roots should be placed in water for a time, or better, in mud. In planting, and this applies to all trees and bushes alike, the holes should be dug large enough to take in the roots without cramping, a few shovelfuls of moist and mellow top soil packed firmly round the roots, the hole filled in and firmed thoroughly to within a couple of inches from the top, where the dirt should form a loose mulch. Manure or fertilizers should not be put in direct contact with the young roots. The firm packing of the earth is very important. The trimming of the tops of the newly-set trees will be spoken of later, as different methods apply to the various trees, vines and bushes; but in all cases the bruised and torn roots should be trimmed off before planting, and exceptionally long roots may be cut back to correspond with the rest of the system.



THE VARIETY QUESTION.—This important phase of fruit culture is one upon which endless questions are asked, and upon which advice is often a difficult and dangerous matter. The man who plants for his own use requires, in addition to hardiness and a fairly productive habit, high quality in the fruit. He who is planting for commercial purposes will rate productiveness and a showy appearance far higher than quality. The question is more complicated from the fact that local conditions have a strong effect on the behavior of varieties. To such an extent is this true that a variety successfully grown in one district may be almost worthless on different soil and with a slightly different climate. Any varieties named in the follow-

ing chapters will be such as have been tested under a good many conditions and over a large extent of territory. A few suggestions may be offered to intending planters. Do not buy largely of any variety simply on the recommendation of the nursery agent. Nurserymen, it is true, try to grow chiefly the varieties that are most called for, but they naturally propagate new varieties to a considerable extent, and also have a natural preference for varieties that grow easily and thriftily. The nurseryman is only human and he very reasonably, therefore, pushes the sale of his surplus stock. If that surplus consists of undesirable varieties somebody will eventually be hurt. Lots of our nurserymen are honorable men, well posted in their business. The purchaser is safe in such hands. But to buy from an irresponsible agent, varieties of which the purchaser

knows nothing, simply from the glowing description given by the seller, is courting disaster, indeed. Eschew new varieties except to a small extent for testing purposes. Ninety-five per cent. of the new varieties come on the market with a

flourish of trumpets and descend to an inglorious grave within a few years. Let the intending purchaser make up his mind what kind of tree he wants—hardy, productive, early, late or what not—and then if the requisite qualities are claimed for any particular kind, find if such variety has been tested in his district. If it has not it would be wise on his part to enquire about it from the Horticultural Department at the Central Farm, Ottawa, or the Ontario Agricultural College, or write to the nearest fruit experiment station.

INSECTS AND FUNGI.—Nobody who takes up fruit culture, even in a small way, can expect to achieve success without some knowledge of insects and fungous diseases. In the Farmers' Institute Report for 1896-7

will be found a capital outline of entomology, written by the late Prof. Panton. Anyone who carefully refers to that article will be able to get a good grasp of the subject. The bulletins issued by the Department of Agriculture entitled "Instructions in Spraying" touch on insects also, as well as the various fungi, such as apple scab and grape mildew. Spraying, though not always a sure cure, will generally successfully control our insect and fungous pests. Success, however, will not be achieved unless there is a right understanding of the nature of the enemy, and prompt and thorough measures taken on the grower's part. Neither the amateur nor the professional can afford to produce fruit of an inferior kind, and it will be a red-letter day for Ontario when her fruit-growing population realizes the fact.

THE APPLE.

After all that may be said in favor of pears, plums and peaches, the apple, as far as Ontario generally is concerned, must remain the king of fruits. The keeping qualities of this fruit, the durability of the tree and its adaptability to so wide a range of climate and soil will always make it the staple amongst fruits. It has been demonstrated over and over again that the apple orchard, thoroughly cared for, will be one of the most profitable parts of the farm. Apple growers, generally, are becoming alive to the fact that, with proper methods of grading and packing, the market is practically limitless, and no intelligent man need feel uncertain as to whether or not the planting of an apple orchard will be a profitable investment.

THE SOIL.—The apple will thrive on a greater variety of soils than, perhaps, any of our fruits. Hard, shallow and wet lands must, however, be avoided. As long as the soil is porous and friable, and the subsoil not too compact, success can be achieved on all

soils from sand to clay. Thorough preparation of the soil before planting must be insisted on. It is better to plant on land previously occupied by hoe crops, such land being usually both clearer and in a better mechanical condition. A clover sod plowed the previous fall and thoroughly worked in the spring will also be satisfactory. The site should have a northwesterly or northerly exposure. These matters have been referred to at greater length in the opening chapters on "General Principles."

BUYING THE TREES.—It is usually best to purchase the trees in the early fall, but with the stipulation that they shall not be removed from the nursery row till the leaves have



fallen and the wood ripened thoroughly. The subject of fall or spring planting is a much discussed one, each plan having its advantages. There is often more time in the fall to do the necessary work, and if the fall planted trees gets thoroughly established it will no doubt stand a dry summer better than the tree planted in the spring. But the question of the tree ripening its wood before being dug is important. Young trees planted in the fall with wood not matured, when subjected to the severe cold and dry-


ing winds of winter, will be hardly likely to survive. In the colder districts the fall planted tree will in any case have a trying time the first winter and on the whole the consensus of opinion is decidedly in favor of spring planting. Select nothing but well-grown, clean-barked, healthy trees. If any dark discolorations show, where limbs were pruned off the previous year, it indicates poor constitution and the tree should be rejected. Such trees may have what is called "black heart," and will rarely develop into good specimens of the vigorous thrifty kinds. A tree two years old from the bud or graft is

to be preferred to older stock. In any case do not plant a tree more than three years old. The younger tree will usually have a more fibrous root, and in nine cases out of ten will outgrow the older stock. Reject also any trees having root-galls, such as are illustrated in Fig. 14. Though little is known of these gall growth, there are grounds for suspecting their contagious character, and it is safer not to plant affected trees.

M. BURRELL.

St. Catharines, Ont.

SPRING CULTIVATION OF VINEYARDS AND ORCHARDS.

S spring approaches, it is the one thought, what will be the best way to work up our vineyards, or orchards, so as to have the ground mellow all summer, and in what way it is best to leave it in the fall to resist the frost and at the same time drain off the surface water? Many growers advocate ploughing up to the vines in the fall, and ploughing away again in the spring; others plough two or three furrows up to the vines in the fall, and complete the ploughing up to the vines when spring comes, after rolling down, and working the same with the disc harrow. And again another method is used:—In the early fall sow rye or crimson clover, which certainly holds the snow and serves as a covering, at the same time furnishing a valuable manure in the spring when ploughed under. But does not that plan of turning over all the soil in the fall (whilst draining the soil well) give the winter frost too good a chance to penetrate the soil and kill the roots, as was the case in that severe winter of 1898 when it was plainly shown that where orchards and vineyards had not been fall ploughed there was hardly any loss from frost killed vines and

trees, whilst where the soil had all been ploughed in the fall the frost had got down very deeply and killed many hundreds of vines and trees, and this could clearly be seen in orchards and vineyards, side by side, and so the question presents itself which is the best way for spring and fall cultivation. Here is one which the writer has practiced for many seasons, and has proved the usefulness of it, especially in that severe winter of 1898:

Early in the spring the grape hoe is put in the vineyard or orchard and three furrows are drawn away. A man following with a shovel cleans out any dirt remaining around the tree or vine. This throws all soil and weed seeds right out. This done, the gang plough throws up to the vine or trees all the soil, after which it is well rolled whilst moist, rolling down at noon and at night what was ploughed in morning and afternoon; it can then be left for a while, and is in good condition for the disc harrow which is run through about once a week in the growing season. As the fall draws near reverse the disc so as to throw up the soil to the vines or trees for the last three or four times the disc is run through. This

leaves the soil high and at the same time in good shape for drainage; in this way the soil has time to settle and pack before the winter's severity, and frost at the root.

Vineyards and orchards worked in this

way very successfully resisted that disastrous frost of the winter of 1898, which caused such loss of plant life in many orchards and vineyards.

JUNIOR.

Winona.

THE BEN DAVIS IN NOVA SCOTIA.

SIR,—Perhaps the discussion as to the thrift and hardiness of the Ben Davis has already been sufficiently extended, but, since the quotation from the Nova Scotia Fruit Growers' Association's report, given on page 63 of the February Horticulturist, has implicated me somewhat, may I give my own opinion of the matter. In the first place I do not see how any one could draw the conclusion from what was given in the report above cited that the Ben Davis was either "delicate" or "of short duration." It is stated that it is slow growing, but Mr. Donaldson's objection was that the Gravenstein would "outgrow the Ben Davis," not so much because it was a more rapid grower but because of its well known habit of making a comparatively few large branches instead of dividing up into a number of smaller branches as is the habit of the Ben Davis. But this is a question entirely aside from the one of hardiness and thrift. As to these latter points my own opinion, formed from observing this variety both here and in the west, is that there is no other sort which is more thrifty growing or more free from disease. And the only objection which can be urged against planting it here is the one given by Mr. Parker, that we can grow better varieties. Yet, so far, the Ben Davis has given good profits to those who have grown it, and since it is such a healthy tree, it will make capital stocks on which to top-graft other sorts when the Ben Davis has been superseded by some other variety with more juice and less wood in its fruit.

F. C. SEARS.

Wolfville, Nova Scotia.

SIR,—When I saw Rev. Father Burke's article in the December number of the Horticulturist I intended writing a correction of the views he attributed to me regarding the Ben Davis apple in Nova Scotia and P. E. I., but on second thought decided to put myself right at the forthcoming meeting of the P. E. I. Fruit Growers' Association. This I did so far as stating my opinions regarding the Ben Davis for propagation in Prince Edward Island. The publication of Mr. Parker's letter in your February number seems to show that a misapprehension will not down until it is plainly corrected. My remark to Father Burke had regard *only* to the character of the variety in question as a *fast grower* which was based, as far as Nova Scotia opinion was concerned, on the discussion on page 97 of the Nova Scotia Fruit Growers' report for 1898. I certainly did not say that the Ben Davis was regarded as delicate either in Nova Scotia or Prince Edward Island.

The durability of the tree as the producer of marketable apples in the Lower Provinces is a point which was raised by Prof. Craig in his address at the Nova Scotia Exhibition of 1899, and calls for careful consideration. Partizanship for any variety based on insufficient experience should be avoided.

D. FERGUSON.

Tulloch Ave., Charlottetown, P. E. I.

A cheap whitewash paint for outdoors is made by using just enough water to moisten the slaked lime, and then adding kerosene oil to thin it to a consistency for easy application.



TIMELY TOPICS FOR THE AMATEUR—II.

APRIL! The very word April suggests life and activity to horticulturists generally. It is probably the busiest month of the year in the garden, especially in sowing and planting; and those who apply the most energy intelligently in their gardens during April will have the best chance of securing early and bountiful crops. On earnest and thorough work during this month, mainly depend the crop results of the season.

“April push, tends to Autumn plenty.”

THE GREENHOUSE. — The cutting bed should have close attention, potting the cuttings into small pots as soon as sufficiently rooted. Replenish the bed with more cuttings of coleuses, alternantheras, achyranthes, etc., if more plants are required. Alternantheras root better now as a rule than if the cuttings are taken earlier.

Poinsettias should be cut back to the old wood, and when the plants are showing buds, shake out the plants and re-pot them in rather sandy soil. A size smaller pot will probably suit them for a short time, when they must be potted in richer soil, in well drained pots in which they are to flower. If young plants of these are required, after

cutting the plants back as just mentioned, instead of re-potting, allow the young shoots to grow until they are three or four inches long, cut them off close to the old wood, with a small piece of the old wood attached, put them in the cutting bed, and when rooted pot into small pots, re-pot into larger pots as required, these will make nice dwarf specimens of these showy decorative plants. poinsettias like plenty of heat and moisture when in a growing state.

Freesias may be dried off gradually, and treated as recommended in the March number of the Journal.

Dutch and Roman bulbs will be about over flowering now. Tulips, and the hardy varieties of narcissus, such as Von Sion, Trumpet Major, etc., that have been forced, may be planted out in the borders outside as soon as frost is out of the ground; these, if left undisturbed for a year or two, will furnish, for successive seasons, large quantities of bloom, and this is the best way to dispose of them, as they are of no use for forcing again the following season.

Roman hyacinths, and the more tender varieties of narcissus, such as Paper White, Grand Monarque, etc., may as well be



FIG. 1785. TEA ROSES. J. Gadby. Photo
Souvenir d'Wooton. Perle des Jardins. Bridesmaid.

thrown out altogether, as they give poor results under the best of treatment after having been forced. Tuberous begonias should be kept growing in a cool temperature.

Old plants of double flowering primulas (especially *Sinensis alba plena*) may be divided, and if young roots can be obtained on the divisions, as is often the case, they can be potted at once into $2\frac{1}{2}$ or 3 inch pots in light soil. Water thoroughly and shade the plants well until established; a temperature of 60° to 75° will suit them very well. Cuttings of these plants can be rooted readily in sand, if kept in a temperature as before stated, and kept well shaded and watered.

Rex begonias may be propagated very easily now from old leaves of these plants. There is still time for cuttings of winter flowering Begonias if started at once.

Re-pot young chrysanthemums, never allowing the pots at this stage to be overcrowded with roots.

Balsam, aster, zinnia and similar seeds may be sown.

Transplant early sown annuals, etc., as required, and gradually introduce them to a lower temperature, but not until they have become established after transplanting; this rule applies generally to almost all plants after transplanting.

Sow nasturtiums, ricinus (castor oil bean) as required, one seed of the latter in a 3 inch pot, and two or three seeds of nasturtium in the same sized pot; they will grow on in these until wanted for vases and beds, and can be easily hardened off before planting outside, sown in this way.

Cinerarias and herbaceous calceolarias should be pitched on the rubbish heap as soon as they are out of flower, as they are of no further use, only as a nursery and parade ground for green fly, of which, as a rule, there are plenty at this season of the year without providing nurseries for more.

Azaleas should be re-potted when out of bloom if they require it; use plenty of drainage, light soil packed firm, keep in a temperature of 60° to 75° for a few weeks, water at the roots liberally when required, and syringe daily.

Fancy and zonale pelargoniums should be well in flower by this time. The fancy varieties are very subject to attacks of green fly, and should have been well fumigated whilst growing, and as fumigation when in flower injures the bloom, fumigate lightly, if at all. Syringing these plants when in bloom is not desirable for the same reason.

The young fronds of ferns, especially the Maiden Hair varieties, also spireas, heliotrope, mignonette and coleus, amongst others, are very easily injured by heavy fumigations; lift the plants on to the floor, or cover with newspapers before fumigating.

Damp the floors frequently, syringe fuchsias, lantanas, etc., every day if the weather is suitable, this will help to keep down the red spider.

Shading the glass must be attended to ; light shading and renewed as required is better than heavy shading at this season. A good shading for a small greenhouse can be made by mixing whiting and skimmed milk together, sufficient of each to secure the proper consistency ; apply on a dry day with a whitewash brush ; this makes an effective shading, and does not injure the paint or putty as lime would do.

POINTED POINTS FOR APRIL.—Water growing plants thoroughly, and early in the day. Syringe on bright days early in the afternoon. Pay close attention to shading and ventilation. Close ventilators, and dampen floors early in the afternoon. Fumigate after sundown.

WINDOW PLANTS.—This is a good time to re-pot window plants that require it. Cactus should be potted, after flowering, into sandy soil ; use plenty of drainage, but don't over-pot. Many varieties of cactus require re-potting but seldom, especially if the drainage is perfect. Sow seeds of annuals and perennials required for borders. Watch closely for insect pests. Water thoroughly, and syringe two or three times a week on warm days. Dutch and other bulbs that are out of flower can be treated as recommended for greenhouse treatment. If you want three or four plants for the window that will permanently repay you, purchase *Sanseveria Zealandica*, *Ficus elastica*, *Aspidistra lurida*, *Echeveria metallica*, and *Farfugium grande* ; one of each will always make the window attractive placed amongst geraniums, fuchsias, etc. The *Sanseveria* requires plenty of drainage, and to be watered thoroughly, but very seldom, and only when dry—once a week, as a rule, is ample. The *Farfugium* likes plenty of water. The *Echeveria* requires very little water.

FLOWER GARDEN.—This is a busy time in this department, making the lawns, borders and surroundings spick and span.

All hardy roses should be pruned by this

time, winter covering removed and the beds forked over, and any fertilizer applied that is intended to be used. Plant roses and shrubs at once when received. Borders of herbaceous plants should be forked over after removing all winter covering.

Divide and transplant perennials, such as phlox, *campanula persicifolia alba*, coreopsis, gaillardias, dianthus, etc., all of these and similar varieties give better results if divided and transplanted every two or three years.

German iris and pæonies are better transplanted in the fall. Dutch bulbs will be making a show in the borders now, some of the heavier blooms will require small sticks to support them.

Dahlias, cannas, etc., may be started in pots in a frame or in the window, early bloom is secured in this way ; harden them off gradually before planting outside.

All plants, such as oleanders, hydrangeas,



FIG. 1786. CALLA LILIES.

J. Gaddy, Photo



FIG. 1787. DUTCH HYACINTH, "NORMA"

J. Gadby. Photo

etc., should be out of their winter quarters by now; plants of these that have not been re-potted recently, will give better results if treated to a few doses of liquid cow manure once or twice a week after growth has commenced; this is a safe and effective fertilizer for all such plants.

Sow and transplant annuals and biennials as required. Edge walks and roll lawns after rain.

Mignonette that has been grown in pots during the winter may be planted out in the border early in May; you will secure some spikes of bloom early by this method if you don't disturb the roots when transplanting.

Don't forget to shade hot bed sashes, and open and close them morning and afternoon on sunny days; one or two hours' neglect now may mean a season's failure.

FRUIT GARDEN.—Planting and transplanting are the main features just now in the fruit garden.

Plant trees and bushes as soon as possible after receiving them; don't throw the bundle of trees down anywhere and leave the roots exposed to sun and air, and then blame the nurseryman for failures.

In planting give the roots plenty of room in all directions, pack the soil firmly, and don't plant too deep.

If you cannot plant the trees at once, heel them in deep, do not lay them down and throw a little loose soil over them, but dig a good deep hole and place the roots in and tramp the soil firmly around them.

A light mulch of long manure helps newly planted trees, but don't smother the stem of the tree; keep the mulch just clear of the stem. Remove mulch from strawberries, and cultivate until the flowering period, then replace the mulch, you will have cleaner and better fruit by this method. Treat the gooseberry patch in the same way. I find that a light mulch in summer helps the fruit, and keeps down mildew to a great extent.

Rhubarb beds like a heavy mulching of manure in the fall; remove a portion of the mulch now if too heavy.

Spraying apple, pear, and plum trees with the blue stone mixture before the buds swell, keeps down black spots or fungi. For making mixture see published formulas in the "Horticulturist."

VEGETABLE GARDEN.—Plant peas and beans as required for successive crops. A few rows of spinach may be sown for late use. I find the Victoria spinach stands the hot sun best, but the Viroflay is the best for general use. Transplant early celery into frames, or plant in the open ground. Sow main crop of celery seed for late planting. Sow cabbage and cauliflower outside for late crops.

Early cabbage and cauliflower raised in frames may be planted out.

The early express cabbage is a good first early, and comes in quickly, about the time asparagus is getting over.

Sow main crop of carrots, beets, salsify, lettuce and radishes, etc. There is still time for a few leeks, if sown at once and transplanted later. Plant Dutch sets, shalots, and garlic. Sow mustard and cress outside. Sow herbs. Parsley should be sown as early in spring as possible, it takes several weeks for the seed to germinate.

Sprinkle seed onions when about three inches high with dry soot, do this early in

the morning when there is a dew, or after a rain; repeat the application twice a week for three or four weeks; if the plants are thoroughly dusted you will not be troubled with onion maggots, as the fly that deposits its eggs in the young onions to produce the maggot will not go near the onion bed if treated in this way.

HORTUS.

Hamilton.

THE TUBEROSE—ITS CULTURE.

WHITE flowers are, have been, and always will be in demand. They may be used with propriety upon any occasion, being alike suitable for the marriage feast and the funeral ceremony; the hall of amusement

and the sick chamber. No lover of beautiful flowers is ever in higher spirits than when he or she is successful in bringing to perfect maturity some beautiful plant and is able to view with admiration the spikes or trusses of perfect, snow-white, sweetly-scented bloom. One of the finest white flowers is the tuberose.



FIG. 1788. THE TUBEROSE.

The tuberose is one of the most beautiful of our summer-flowering bulbs, and yet it is very seldom seen, even in the collections of our most ardent floriculturists. Such a state of affairs should not exist, for its tall spikes of flowers of purest whiteness and waxy texture, emitting, as they do,

their unrivalled fragrance, makes it a universal favorite. This beautiful flower was brought from Mexico a good many years ago. It was then introduced in a single form, and from that has sprung our beautiful double and other varieties in cultivation.

It is a belief among very many lovers of floriculture, that to bring this flower to perfection is a difficult task for the amateur, and no doubt this is the reason of its scarcity. Many think that it must have a place in a greenhouse and that the professional florist *only* can hope for success with it. This is not a fact, however, and tuberose are more easily grown than is generally supposed.

If grown out of doors in beds the bulb should be planted in a deep, *very rich*, sandy soil, and in a warm location. The bulbs should be planted four inches deep and a foot apart, and have thorough cultivation and an abundance of water. In this way they will do well. The *best* way, however, to grow tuberose out of doors is to grow them in boxes. The grower then has them more under control, can water them more thoroughly, and in many ways the better see after their requirements.

In the first place it is important that fine, large bulbs be procured if the greatest success is expected. In many instances small bulbs do not bloom at all and one's labor is

entirely lost. From these large bulbs take off all the small bulblets, as they will not increase the beauty of the plant in the least, for they will not produce spikes, and will only be taking strength from the soil that should be going to the large one. Now take neat boxes, paint them if you so desire, and have them about 12 x 20 inches, and about twelve inches deep. Such a box will hold six largest-sized bulbs. After boring several holes in the bottom, to allow perfect drainage, for the soil must not be allowed to become sour, fill it two-thirds full of a compost made up of two parts of well-rotted cow manure, one part of rich, sandy loam, and one part leaf mould, if procurable, all well incorporated. Set in the bulbs and then fill to top of box with same compost, packing firmly. Then give the contents of the box a thorough soaking.

This work should be done during the last week in May or the first week in June. There is no use of doing it earlier as the tuberose loves heat and will make no material advancement until the weather becomes very warm and settled. It is a custom with many to start this bulb in pots in the house. Such a course is not worthy of commendation, for, if anything, the growth will be checked instead of hastened.

After getting the bulbs boxed, select a warm situation, on the south side of a building, in which to place the boxes, where they may get all the sun and escape cold, north winds. Throughout the season give them an abundance of water every night, and your efforts will be rewarded with success. When once started they will grow rapidly. When blooming time comes, the boxes may be set in any place for exhibition. In the past I have been extremely successful in growing tuberose in this manner.

The Excelsior Pearl is the best variety to use. This is a dwarf double variety, and one single flower from a spike will scent a large room. The single variegated-leaved variety is quite popular also. Tuberose bulbs after blooming are useless, as most varieties bloom but once. The small bulbs that grow on the large one may be preserved and grown to blooming size. When in bloom do not allow the spikes to be rubbed together by the winds blowing, as they would soon be ruined.

There is no reason why every lover of flowers should not succeed with the tuberose.

"There is to me
A daintiness about these lovely flowers
That touches me like poetry."

Fruitland, Ont.

JOHN B. PETTIT.





The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

A School of Horticulture is being opened at the Rhode Island College, Kingston, R. I., with a course which is calculated for professional florists, gardeners, and fruit growers. F. W. Card, horticulturist, will conduct this department.

SAN JOSE SCALE.—Bulletin, December, 1897, of Tennessee, says this insect was introduced to California in 1876, and in 1887 into New Jersey. This is only about twelve years ago and now it has spread throughout almost the entire eastern part of North America. Strange that anyone can say that it was not worth worrying about. When fruit growers have to spray every inch of wood in their orchards in winter with crude petroleum or with whale oil soap, they will be sorry that more vigorous measures had not been kept in force.

TRANSPORTATION.—Our Committee on Transportation consisting of Messrs. W. H.

Bunting, E. D. Smith, and T. H. P. Carpenter, have been making every possible effort to secure better rates for fruit shippers from the Railway Companies. Last year certain important concessions were secured, and for the present season the following proposals have been presented to the Canadian Joint Traffic Association, which have been laid over for consideration at the Montreal meeting.

1. Restore last season's special rates, making them apply to mixed fruits in car lots to all destinations.
2. Make mixed fruits in five ton lots to one consignee, 3rd class.
3. Make mixed fruits in ton lots, to one consignee, 2nd class.
4. Place apples in barrels for shipment in Canada, in car lots, 8th class.
5. Grapes in barrels or large baskets, for wine purposes only, 5th class.
6. Encourage export of fruit to the British market.
7. Devise means whereby a better distribution of fruits by freight in Canada may be accomplished.
8. When refrigerator cars are iced on route, actual cost only to be charged.
9. Permit barrel apples in mixed cars, to carry the carload apple rate.

THE PASSING OF A LIFE MEMBER.

MR. CHARLES E. BROWN, President of the Bank of Yarmouth, dropped dead at his home on the afternoon of Feb. 17th. In him, a true friend of horticulture, a director of the Nova Scotia Fruit Growers' Association, and for years a life member of the Ontario Fruit Growers' Association, has passed away. When in Yarmouth last



FIG. 1789. THE LATE CHAS. BROWN.

October, the writer visited Mr. Brown at his home several times and was received with a royal welcome. He took great pleasure in showing us his very interesting garden, full of various fruits under test, most of which had been grafted or planted by his own hand, and formed his personal care in time of leisure from busier hours. He was a graduate of Harvard University, and well posted in all lines of literature, but seemed to have a special love for horticulture and pomology. We shall miss very much his valuable communications from the pages of our journal. The *Yarmouth Herald* says :

The community was startled, for the second time within a few weeks, on Saturday afternoon with the announcement that another of our prominent citizens, Chas. E. Brown, Esq., had dropped dead at his home at Milton.

Mr. Brown had been about town, as usual, during the forenoon, and returned home and took dinner at noon. He then went to his store, near his residence, where he conversed for some time with Byron P. Ladd, Esq., and about 2.30 o'clock returned home to tell his daughter to go to Mrs. VonMetzke's funeral.

His daughter had gone, however, before he reached home. He went to the kitchen, and after presenting the servant girl with a birthday gift, turned the water tap to get a drink, when, without an instant's warning, he fell prostrate at the side of the servant, who thought he had tripped. As he made no movement nor reply to her call, she ran into the street and called Mr. Chipman Doty, who was passing by, to her assistance, and Mr. Brown was removed to a sofa. Dr. Williamson was at once summoned, who said Mr. Brown's death was instantaneous, and was caused from heart failure.

Mr. Brown was a son of the late Hon. Stayley Brown, M. L. C., and for some years Receiver General for Nova Scotia, and was one of our most prominent and highly esteemed citizens. He began his business career with his father, and shortly after his farther's retirement from commercial life, built and opened a store on Vancouver street, which he carried on for a number of years. He retired, however, several years ago, and devoted his time to the study of agriculture, horticulture and improvement of stock. He was an extensive reader of the best authorities on these subjects, and was an authority on all matters connected with them wherever he was known. Throughout Nova Scotia his death will be long regretted by all who took an interest in such matters, and the Yarmouth County Agricultural Society, with which he has been prominently identified since its inception, has lost the most enthusiastic and devoted member. He also took a deep interest in the Milton Public Library, succeeding his honored father as one of its managers and active supporters.

Mr. Brown was the last of the original Board of Directors of the Bank of Yarmouth, which was established in 1865, and upon the death of its late president, Hon. L. E. Baker, succeeded that gentleman as its president.

Mr. Brown took a deep interest in the Mountain Cemetery, in school matters, and many other of our local private and public institutions, and his loss will be greatly felt for some time.

Mr. Brown received his early education at Yarmouth Academy, and subsequently went to Cambridge, Mass., where he graduated at Harvard University with honors. Last year Mr. Brown received and accepted an invitation to attend a reunion of all the members of the class who graduated with him. These were few in number, but the meeting was one of great interest to all present.

Mr. Brown was of a most unaffected and retiring disposition, of noble impulses and generous motives. He will be long missed from a large circle of sympathizing friends and neighbors.

QUESTION DRAWER.

Green Corn for Export.

1140. SIR,—Do you know whether any attempt has ever been made to export to England either in cold storage or otherwise, green sweet corn in the ear? I am prompted to this enquiry by seeing the remarks of a writer in a recent number of the Illustrated London News, who wonders why it cannot be found for sale in Covent Garden and other markets. Now that a determined effort is being made to send our perishable products to England, it might be well to try whether corn would not be as acceptable as tomatoes have proved.

E. D. ARNAUD.

Annapolis, N.S.

No attempt to export green corn has ever been made, or even thought of before, so far as we know. Green corn heats and spoils so quickly under certain conditions that it would be a doubtful experiment for any individual to undertake.

We hope the Government will not discontinue its efforts in this direction until something more decided has been accomplished.

Budding and Grafting.

1141. SIR,—We have a lot of seedling stock, apples, plums, pears and cherries, which we budded last summer. In the event of the bud failing to catch, what is the best course to pursue?

1. Will such stock do to remain and be rebudded next summer? If so, is it best to cut back the top any in the spring?

2. Can such stock be grafted successfully?

3. What is the best time to cut scions for grafting in spring, also for grafting seedling stock before spring.

R. DICKENSON.

Strathroy.

In case of buds of last summer failing to catch, the stock may be rebudded next summer, providing it is not too large, nor too old so that the bark is tough. If a younger shoot is desirable for budding on near the ground, the tree may be cut off at the surface in early spring, and a young bud will push out and form a new and tender barked stock for budding. Budding is also sometimes performed high up on trees in nursery rows just where the top is wanted.

Budding is done in August when the bark

lifts easily. Grafting may be done in April, and if the young trees are large enough in diameter at the collar this method would be advisable for such stock of apple, pear or plum trees; with the cherry it is much more difficult to succeed by grafting. The method of grafting is well given in the following from *The Advocate*:

It does not matter much whether the scions are cut in the fall, in the winter, or just before they are wanted in the spring. In very cold latitudes

it might possibly be better to cut in the fall or early winter and place in a dry, cool cellar under a light covering of sand. If cut in the spring they must be cut before the buds have begun to swell, as it is better if the stock is a little further advanced than the scion. Let the scions be cut to about four buds each, and always take them from good, healthy, vigorous shoots of last years growth. We take it that top grafting is intended, as root grafting is chiefly done in the nursery. The work of top grafting may commence in spring as soon as the sap is in motion, which is indicated by the buds on the tree beginning to swell, and it may continue till the leaves are half out. A fine, sharp

As a scion
could fit the stock

FIG. 1790.

saw, a chisel or strong knife and small mallet are all the necessary tools. The branch should be carefully sawn off and a clean, smooth surface left. If the stub is small, it may be split with a heavy-bladed knife; for bigger branches a chisel answers the purpose. The chisel itself or a small wedge can be used to hold the cleft open till the scions are inserted. Two scions, one on either side, are usually inserted where the stub is larger than an inch through. The lower ends of the scions are cut wedged shape, the wedge being about an inch and a half long, and the outer edge of the wedge a little thicker than the inner. Fit the inner or growing bark of the scion carefully to the inner bark of the stock, withdraw the chisel and carefully cover all the exposed surface with grafting wax. The two especially important points are: first, to see that the scion fits tightly down its whole length; and second, to be sure that every cut or exposed surface is completely covered with the wax. A good wax is prepared from resin, 6 pounds; beeswax, 1 pound; linseed oil, 1 pint. Apply hot with a brush, about a quarter of an inch thick, or a little less, over all the joints.

Sometimes Nursery trees of 4 or 5 feet in height are whip or splice grafted three or four feet from the ground. This is especially desirable in case the scion is of a slender or drooping character.

Tar Paper Bandages.

1142. SIR,—Would common tar paper, such as is used for building purposes, wrapped around the trunks of fruit trees as a protection from sun scald, be injurious to the trees?

CHAS. YOUNG, Richard's Landing, Algoma.
No.

Vladimir Cherry.

1143. SIR,—Is it the habit of the Vladimir cherry to ripen its fruit unevenly, that is for ripe and green fruit to be on the tree at the same time?

C. Y., Richard's Landing.

We have not noticed this to any great extent in the Vladimir or Russian Morello cherries. This uneven ripening, however, is quite characteristic of the May Duke, a cherry of totally different type and habit.

A Ten Acre Fruit Farm.

1144. SIR,—I have a ten acre fruit garden, and I am at a loss to know how to care for it in the best possible manner. I shall be greatly obliged to you for some information regarding spraying and other matters.

M. A. HAMILTON, Toronto.

Our correspondent has not given us enough information regarding the varieties planted to enable us to reply very definitely. A ten acre fruit garden, properly planted and cared for, might easily yield as good an income as a hundred acre farm managed in the ordinary slip-shod manner; but to get the best results the best methods must be followed. Spraying is done for three objects: (1) to kill injurious insects; (2) to destroy fungous growth, such as apple scab or grape mildew; (3) indirectly to improve the vigor of the tree. For the insects Paris green is the specific for the leaf eaters, and whale oil soap, potash or crude petroleum for sucking insects. For fungi, Bordeaux mixture is the specific. The times of application are not so important as the method

and thoroughness. The idea is to keep the whole tree or plant completely covered with the mixture during the whole season, so that no fungus or mildew germs falling upon the surface can possibly germinate. To accomplish this it is usual to give the first application before the blossoms open, and to give fresh applications at intervals of two or three weeks during the season.

We shall be pleased to answer any specific inquiries make by our correspondents.

To Kill Dandelions on Lawn.

Cut off top and put on one drop of sulphuric acid on root; coal oil is said to do, but enough must be put on to sink down around root.

R. T. FRAZER, Vernon, B.C.

Hardiness of Apples.

1145. Are Sutton Beauty, York Imperial, Grime's Golden and Jonathan apples as hardy as Northern Spy?

So far as we know these varieties are all about equal in hardiness. None of them have been very widely grown in Ontario, except Grime's Golden, which was once distributed by our association.

Grafting the Grape Vine.

SIR,—In the question drawer of January number of the Canadian Horticulturist is an answer to Geo. Thomson, Wolfville, N.S., about how best to graft a grape vine. I would like to give my experience in doing the work of grafting the grape vine. The better way to graft the vine would be, as soon as the weather would permit in the spring or the frost is partly out of the ground, dig the ground away from the vine down to the root and cut the vine two inches above the root square off; then take a mitre saw and cut a slot two inches deep instead of splitting the same with knife or chisel; open the slot with a wedge and set the scion in place and withdraw the wedge; remem-

ber to leave two buds on the scion. When the grafting is complete draw the earth nicely around the vine, leaving one bud uncovered, which will help to keep the scion moist till it will start to grow.

J. W. W., Jordan Station.

Yucca.

1146. SIR,—Is the *Yucca (filamentosa)* suitable for this climate? Is it planted in tubs or in the ground? Will it live in the ground all winter? Give what instructions you can for planting and culture of this plant of which I read in a former number of *Horticulturist*.

SUBSCRIBER, Orangeville.

Yucca filamentosa is considered to be quite hardy in almost any locality in Southern Ontario, and is suitable for planting outside under conditions that are favorable to plant culture generally. I have known fine specimens of these plants to have been killed out in very unfavorable winters, when there has been no snow to protect them; but this has occurred on badly drained clay soils, a condition that suits but very few plants, however hardy they may be.

A well drained, light loamy soil, is most suitable for these plants, although they oftentimes grow and flourish for years under less favorable conditions. A light covering of dry leaves and straw, or long manure, is advisable, but not absolutely necessary in

favorable seasons for winter protection; care must be taken not to cover the plants too heavily.

In spring, say early in April, uncover the plants gradually, removing all the wet heavy covering first, and replace the dry part of the covering again, so as not to fully expose the plant at once to the hot sun in day time, or frost at night; the balance of the covering can be removed as the weather permits.

The *Yucca filamentosa* can also be grown in large pots or tubs, and stood outside in the summer, removing them before severe frosts to the house or a dry cool cellar, that has a temperature just above freezing point. These plants require very little water during winter, only sufficient to keep the soil barely moist.

The *Yucca filamentosa* is a native of the southern part of N. America, and is a very desirable decorative plant at all seasons; but when in bloom, its showy flower spikes often three or four feet in height, makes it a conspicuous and pleasing object on the lawn or in the garden. It requires no special culture, other than those mentioned, except perhaps a few applications of liquid manure in the summer if grown in a pot or tub.

Hamilton.

WM. HUNT.

Open Letters.

The Care and Planting of Spruces.

SIR,—Why is it that we see so many lawns and gardens with such a number of dead spruce trees? Is it the cold winter? Surely not. Does it not seem to suggest bad planting, or the roots too long exposed to wind and sun before planting? The writer has planted many hundred spruces, and in all cases has had the greatest success. Several things seem essential, but first and foremost, after selecting the place for planting, either a hedge or single spruce, if heavy soil, prepare some well pulverized earth and dig a large hole, not necessarily deep, but broad; place the tree in it, having removed all mangled and bruised roots with a sharp knife, and sift among the roots the prepared soil, giving the tree a gentle shake to settle the earth. If the soil is apt to bake it is advisable not to tread the earth too firmly round the roots, as it sometimes hardens and recedes from the sides of the hole as the hot weather advances.

Fill up the hole level with the surrounding ground and mulch with a thick layer of straw, hay, or better still, when procurable, with lawn clippings; this prevents evaporation of the moisture in the summer months.

The fall seems the most favorable season for setting evergreens, as they have the advantage of being thoroughly established before the summer. It is much better, where the soil is sandy loam, to obtain trees from a nursery of similar soil. If one is going to plant a considerable number of spruce, I would advise the planter to drive to the nursery with a wagon, having filled the box with wet straw, and take the trees dug straight up from the nursery, placing them in the wagon and packing the damp straw round each. Then the roots do not suffer from being both wind and sun dried. Each root is covered with a resinous substance which, if once dried, prevents it from taking up both moisture and nourishment for the growth

and life of the tree. To those living far from a nursery, it would be the better plan to buy young seedlings from any nurseryman and plant them out in nursery rows, when having been hoed and cultivated for two or three years, they would be ready to be planted more carefully, being handier when wanted, always bearing in mind that two things are most important to success: (1) Never expose for a moment the roots to either the wind or sun; (2) Have as much earth adhere to the roots as possible when digging them up, not shaking it all off, as is too often done. If these remarks are carefully carried out there is no reason why spruces should not live and grow when transplanted as easily as any other tree.

Winona.

JUNIOR.

Fraudulent Packing.

SIR,—I have seen several articles in various newspapers, as well as in our magazine, on "Fraudulent Packing." In watching the packers in times past I have thought and said if the fruit buyers would give us a better price and take the best fruit at that price, also pay us more for good varieties than common ones, they might take the second quality at a less price, and it would be better for all concerned. And then our fruit would have a good name in the foreign markets, and there would be no difficulty in getting sales at a good figure.

But, no; they not only pack fraudulently, but give them other names frequently. Some two years ago our Huron "Apple King," so called, got our apples. We had a few barrels of Hubbardson Nonsuch: they were rather small, but sound; the packer marked them XX. When we took them to the station D * * C * * asked why those barrels were marked XX, and said "I will see them." He opened a barrel. "Oh," he said "they are all right." He then told the man that was stencilling them, "*Mark those barrels Ontario.*" I thought at once it was a dishonest trick; by so doing deceiving the buyer. The same party, by his packer, acted dishonestly by us; promised to pay us two cents each for fetching out the barrels, and asked us to pack about a dozen barrels and would pay us for it, but we got nothing for either.

I am afraid some of our buyers will get nipped this year, and really I can't pity some of them.

Goderich.

WALTER HICK.

San Jose Scale.

SIR,—I read with a great deal of interest the letter of A. W. Graham, nurseryman, of St. Thomas, on this subject. I am one of those who suffer the most inconvenience from the existing laws, being a small local nurseryman, my customers coming direct to the nursery more or less every day during the planting season. But, while I can sympathise with friend Graham in the inconveniences he mentions, I have come to a very different conclusion from what he has. Instead of trying to induce the Government to relax their efforts, I think that all nurserymen, as well as fruit growers, should back up the Government in their laudable efforts to exterminate the dreaded pest, and cheerfully make the best of the inconven-

ience attending it. It is an old and true motto, "Of two evils choose the least." In principle, I am an out and out free trader, but, in this case, I think it was a commendable thing to prohibit the importation of nursery stock from the States. If one importation of infested nursery stock, through the carelessness or connivance of the officials, were permitted to come into Canada and be spread broadcast over the country, it would soon nullify all the efforts which the Agricultural Department has been making to exterminate the pest.

To the point that there are not fruit trees enough in the country at the present time to supply the demand, that will in time right itself. There is abundance of capital, business enterprise and horticultural skill to produce all the nursery stock which the country requires, if there is a reasonable prospect of disposing of the same at sufficiently remunerative prices.

Wellburn, Ont.

JOHN M. McAINSH.

Our Journal.

SIR,—I take pleasure in letting you know that I have received the first number of the Canadian Horticulturist for 1900. This being my twenty-third anniversary as a member of the Canadian Horticulturist Society and recipient of its valuable journal. I must tell you I have been pleased on many of these anniversary occasions with agreeable and pleasant improvements, especially of late years. I thought last year's dress, style and contents could not be improved on much more; but I have been agreeably corrected in my opinion, for on seeing and looking over the Horticulturist for January it gave me that animated pleasure that decided beauty, improvement and perfection can only give, for it has taken on several degrees of marked improvements, and I feel that its readers have something to be proud of in knowing that we have such a splendid paper to help to build up horticultural taste in our beautiful land. I must tell you we have a good strong Horticultural Society in Goderich, as there is quite a number of enthusiastic fruit and vegetable growers here, and our horticultural display at the fall show is in many exhibits superior to any thing seen in other parts of the country. It has been your wish that all members should state their opinion on the benefit of distributing plants and trees. I must tell you I have several standing monuments of lasting pleasure from the past distribution of trees and plants, viz.: the Ontario apple tree I received over twenty years ago could not be taken from the present owner for less than thirty dollars; my Miles Grape I could not part with for any reasonable price as it is one of the best of my forty-four varieties that I have fruiting; then my Idaho Pear, Dempsey Pear and Wickson Plum, all beautiful promising trees that would not have come into my possession if I had not got them in this way. It is well known that people getting trees this way are sure to take better care of them, so I like the system. Our Horticultural Society will have a series of discussions this winter and I shall send you some of the papers read before the Society. I will close by wishing you and all the readers of the Horticulturist a happy and prosperous year.

Goderich.

W. WARNOCK.

OUR AFFILIATED SOCIETIES.

LINDSAY.—At the monthly meeting of this Society on the 13th of February a very interesting paper was read by Mr. W. M. Robson on the work of Horticultural Societies and especially that at Lindsay. He showed the double advantages of affiliation with the Ontario Society and figured out that in return for each member's subscription of \$1.00 he received in return at least \$3.00 in the value of (1) The Monthly Journal, (2) The Report, (3) The Plants (4) The privileges of the meetings.

The Evening Post gives two columns to the report of the lecturer sent by the Ontario Society, Mr. Martin Burrell, of St. Catharines, in the Council Chamber, Lindsay, March 8th. The hall was crowded with ladies and gentlemen to hear his address on Birds and Horticulture. The evening was opened by some gramophone selections, after which Mr. Robson introduced the lecturer, who united the instructor and the entertainer in a most remarkable manner.

HAMILTON.—The schedule of premiums (not money) offered and list of exhibits asked for the flower show, is out for the month of June. There are three classes of exhibits: I.—Amateur class. II.—Amateurs with Greenhouses. III.—Commercial Gardeners and Florists. At the bottom the following note is added: "The plants in the Amateur classes will be sent for and returned at the close of the exhibition." The following is the sub-division Class I:

I. Amateur Class—Roses: The best six Roses, distinct. Three Roses, distinct. One vase of twelve blooms, any varieties. One vase of six blooms, any varieties.

Pæonies—Six varieties, distinct. Three varieties, distinct. Largest and best collection.

Herbaceous Plants—Perennials (Cut bloom)—Best collection of Perennials, not less than six varieties, named—two spikes of each. Best three varieties. Best vase of cut bloom—Perennials.

Plants in Pots (Grown in Dwelling House,—1 Palm, 2 Begonias, 3 Geraniums, 1 Amaryllis, 1 Dracena, 2 Fuchsias, 1 Geranium, 2 Coleus, 1 Fern, 1 Fuchsia, 1 Cactus. The best House-plant of any variety.

TORONTO JUNCTION.—On the evening of Jan. 23 the members of the Toronto Junction Horticultural Society met and listened to a very interesting address upon the "Care of House Plants," by Mr. A. Gilchrist. The very difficult problem of watering was fully gone into. The effect of atmosphere in the house and outside was dealt with in a masterly manner, and indicated that with an east wind, when the atmosphere was damp, water should be used sparingly while with a west wind and dry atmosphere more water might be used. All, however, requires judgment. In summer plants dry from the top. In the house they are likely to dry from the bottom. By empty flower pots soaked and dry, Mr. Gilchrist illus-

trated, ringing a sound from each, the condition of the roots within. Re-potting plants, potting palms, the soils to be used, feeding plants and dealing with insect pests, were matters Mr. Gilchrist dealt with, and his exposure of large growth by means of nitrate of soda solution was a deterrent to nurserymen to produce immense plants with small flowers. To produce flowers, the bone dust had been found to be very beneficial, and summer heat, to purify soils, he thought even better than the winter frost.

LONDON.—The first public meeting of the London Horticultural Society was held in the Auditorium last night. About one hundred and fifty horticultural enthusiasts were present. The platform was artistically decorated, being hung with flags and bunting, and set with graceful palms and other plants. The chair was taken at 8:30 by Mr. John Balkwill, the president, and with him on the platform were Rev. Dr. Bethune, Very Rev. Dean Innes, and Mr. T. H. Race, of the Mitchell Recorder. The proceedings opened with the singing of "Soldiers of the Queen," by Miss Winnie Hooper and Mr. A. G. Stevens, with accompaniment by Miss Smallman.

In his opening remarks, President Balkwill referred to the recent organization of the society and the encouraging outlook for its future success, and enumerated the advantages which membership in the society gives. He regretted that there were not more ladies on the membership roll.

On rising to deliver his address on "The Moral Influence of Floriculture in the Home," Mr. Race humorously impressed upon the audience the fact that his own somewhat attenuated build was not to be attributed to the fact that he was a horticultural enthusiast, but rather to the fact that he was an editor of a country weekly, a position which entailed considerable worry. He referred to London as being a favored city in its own natural advantages, and the fact that its surrounding agricultural district was one unsurpassed on the continent, and perhaps in the world. The horticultural exhibit at the Western Fair is one unequaled by any other exhibition. Mr. Race's address was received with close attention, and tended to inspire the Society with a high conception of the possibilities which were within the reach of the members.

Miss Hooper sang "A May Morning," followed by Mr. A. G. Stevens in a stirring patriotic ballad. Mrs. A. A. Campbell gave three enjoyable recitations.

Rev. Dr. Bethune's address concluded the evening's interesting programme. He spoke instructively on the many insects which are such a source of annoyance and loss to the horticulturists, and showed how horticultural societies had done good work in providing remedies for their extermination, either by the use of chemicals or by the propagation and introduction of other insects, which were not injurious to plant life, but preyed upon the insects which were.

The meeting closed with the "National Anthem."—The Advertiser.

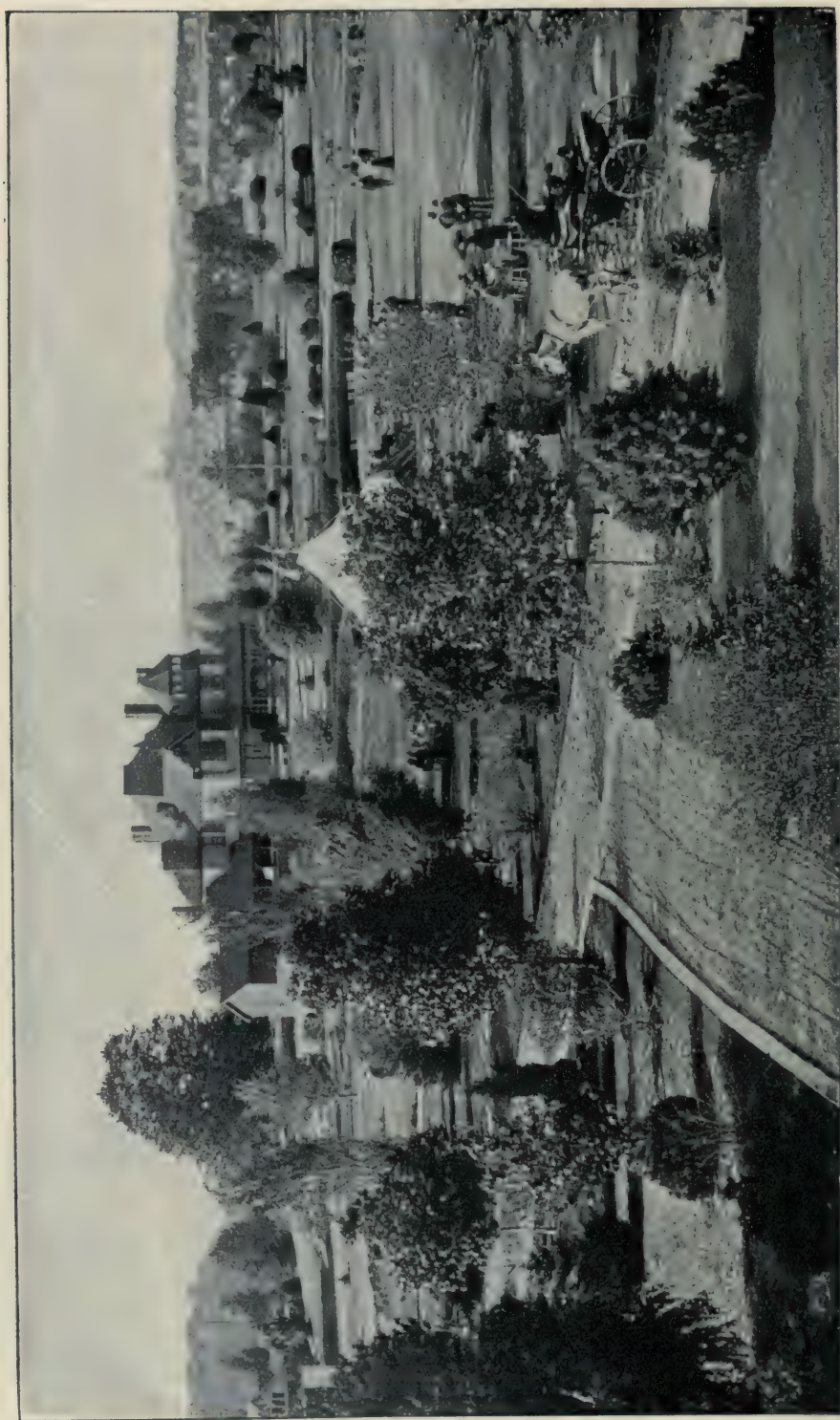


FIG. 1790. View of part of Shrubbery on the Central Experimental Farm at Ottawa, Ontario.

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CENTRAL EXPERIMENTAL FARM NOTES—VII.

THE snow has been gradually disappearing since the middle of March, but there has been little warm weather since that time and very little rain. Sleighing was good in the country up to the end of March. While it is too early yet to write from experience, the probability is that this spring will not be any earlier than last year. At this date, the 14th April, snow may still be seen in places which do not get much sunshine; the frost is not yet out of the ground, and the weather remains cool. What is now needed is a warm rain, followed by drying winds.

The benefits of mulching fruits and flowers in autumn are already apparent. Strawberries in the vicinity of Ottawa which were not covered last autumn will nearly all be killed out. The strawberries at the Experimental Farm which were given a light dressing of straw do not seem to have suffered much, but as the covering has not yet been removed some varieties may have been injured. The lawn grass which was mulched with manure has a greener appearance than where left uncovered and the grass in a few

exposed places may be killed outright. It is very probable that bulbs such as hyacinths, tulips, and narcissus where not protected have suffered. At the Experimental Farm we are confident that they will be all right. The tulips already are showing well, and snowdrops are coming into flower. The great advantage of a mulch which will lie loosely over herbaceous plants was very apparent this year, as where evergreen boughs were used they came out much fresher. This is especially applicable to pansies, as, if a mulch lies too closely over them, they are liable to suffer almost as much as if no mulch was given.

During the past winter extensive experiments have been carried on with lime mixtures of different strengths on apple trees infested with oyster shell bark louse. The trees were thoroughly sprayed with the mixtures and were made quite white from top to bottom. The object of these experiments was to find out if the oyster shell bark lice could be removed thoroughly and economically from the trees by the use of lime, as there was no evidence to show from experi-

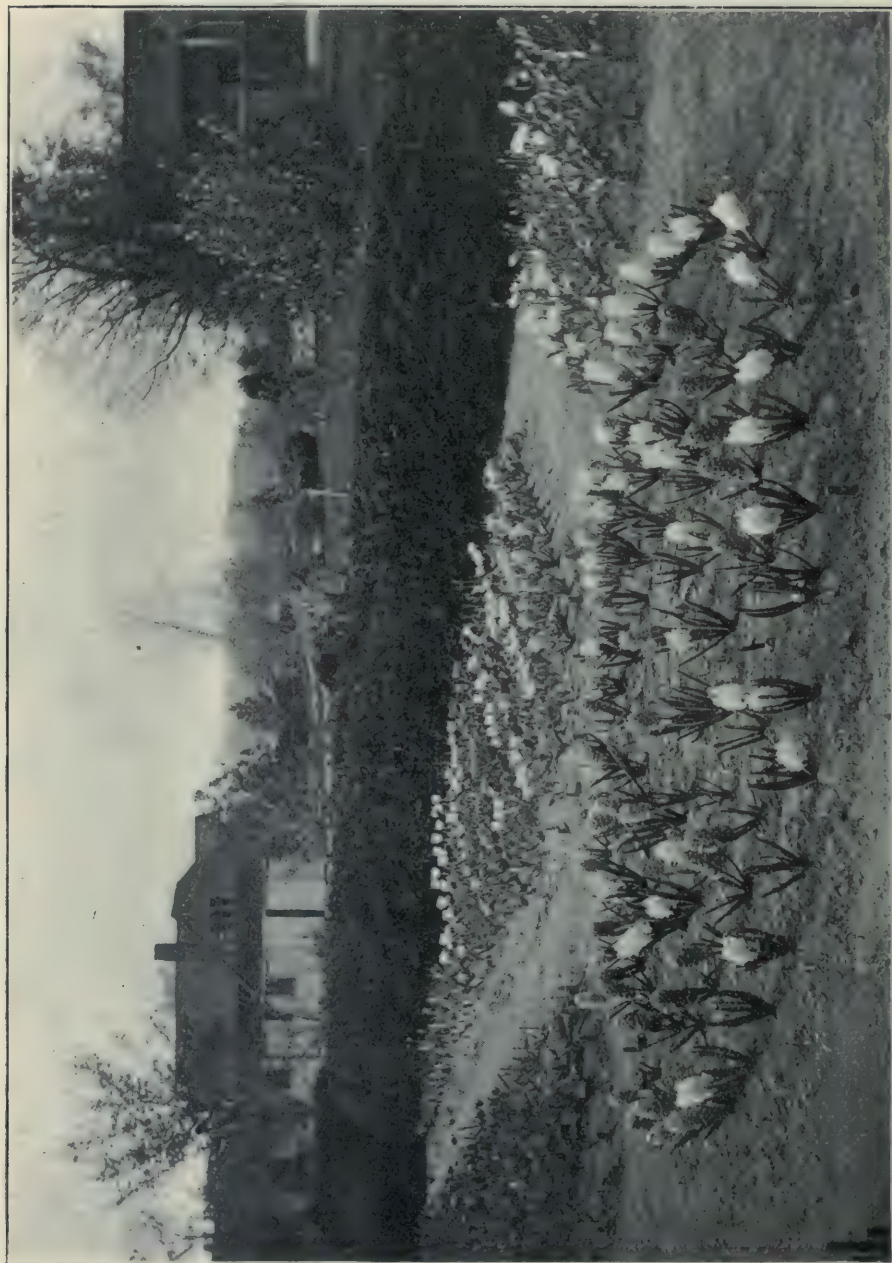


FIG. 1791. FLOWERS IN SHELTER PLACE AT CENTRAL EXPERIMENTAL FARM.

ments conducted a year ago that it would do this. As the lime appears to loosen the scales and the rain wash them off, the effect of the former will not be fully apparent until later in the season.

The work of top grafting the less hardy apples on hardy stocks which was begun last year will be continued next week. The stocks used are Haas, McMahon White, Gideon and Hibernial, as these are very hardy trees, having trunks which do not sunscald, as a rule. It is expected that good will come of this work, as, if the terminal growth does not kill back, those varieties which are subject to sunscald should succeed when grown in this way, provided the stocks are suitable. Northern Spy, which does not succeed when grown in the ordinary way, has been fruiting for several years now, top grafted on Wealthy and Duchess, but as these stocks are two slow growing for the Spy, the trees are becoming top heavy. We are also top grafting the best pears on the Russian varieties to see what the effect will be.

By the time this number of the Horticulturist appears some of the best early perennials will be in bloom or just coming into bloom. One of the earliest and finest of these is the Spreading Pasque Flower (*Anemone patens*), with its large, purple bell-shaped flowers. It begins to bloom at Ottawa in the fourth week of April, when its lovely flowers are very desirable for cutting, there being few other perennials in bloom at that time. Following this, during the first week of May, is the Ox-eye (*Adonis vernalis*), a little plant from six to nine inches in height, with large, lemon-yellow flowers and finely cut foliage. It is a very pretty and dainty plant, and while not very good for cutting, it is desirable on account of its earliness.

The Doronicums, which begin to bloom during the second and third weeks of May, are also fine. The flowers are large and yellow, and the plants from one to two feet in height. *Doronicum Caucasicum* and *Doronicum plantagineum excelsium* are two of the best; the former is earlier than the latter, but not quite so striking. The Epimediums or Barrenworts are little Japanese plants which begin to bloom during the second week of May, and which, for gracefulness and delicacy of color, are difficult to excel among early flowering plants. They are excellent for cutting, the flowers having long stems and the foliage, which is of a shade of green tinged with bronze, going well with them.

Among early flowering perennials, the old fashioned bleeding heart should not be omitted, as the plant is covered with showy flowers for a long time. Other good flowering perennials which bloom in May are the columbines, of which the best are *Aquilegia oxysepala*, *Aquilegia glandulosa*, *Aquilegia Stuarti*, *Aquilegia coerulea*, and *Aquilegia Canadensis*. These are all very beautiful. Then there are the white alyssum, *Arabis alpina*; prophet flower, *Arnebia echioides*; lily of the valley, *Convallaria majalis*; evergreen candytuft, *Iberis sempervirens*; ice-land poppy, *Papaver nudicaule*; lovely phlox, *Phlox amoena*; creeping phlox, *Phlox reptans*; moss pink, *Phlox subulata*; creeping Jacob's ladder, *Polemonium reptans*; and the globe flowers, which are among the best of the early perennials. Of these *Trollius Europaeus*, *Trollius Ledebourii*, and *Trollius giganteus* are some of the best.

W. T. MACOUN,
Horticulturist.

Central Experimental Farm,
Ottawa.

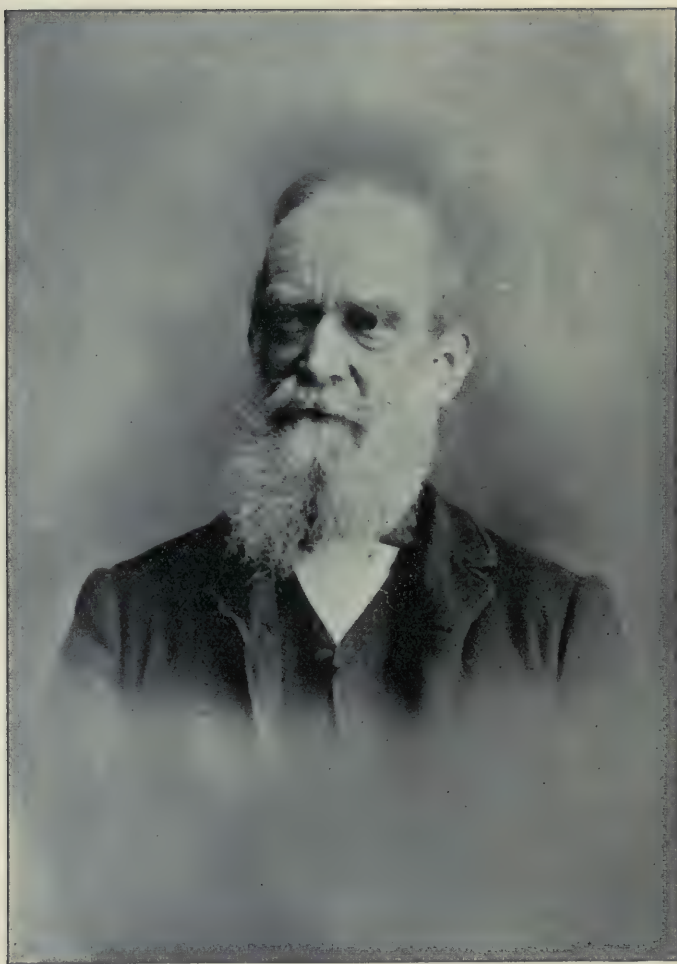


FIG. 1792. THOMAS BEALL, LINDSAY.

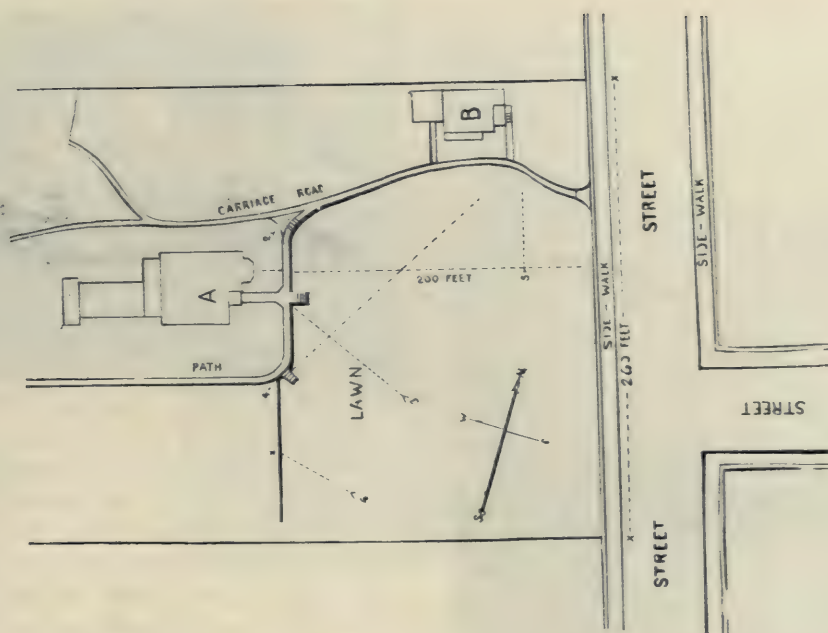


FIG. 1793. PLAN OF MR. BEALL'S GROUNDS.

DIRECTOR THOMAS BEALL AND HIS HOME.

THE series of excellent articles by W. H. Manning, of Boston, on Landscape Gardening has stirred up considerable interest among our readers on this important subject. It was with much pleasure that we recently opened a mail packet and found it to contain a series of views of the grounds surrounding the home of Mr. Thos. Beall, of Lindsay, our well known representative from the County of Victoria accompanied by the following note :

"The photographs presented herewith may not, as pictures, be specially admirable, but in so far as they show effects which may be produced in treating a nearly level, uninteresting piece of land, which had been stripped of every tree and bush, and by following as nearly as possible the rules for laying out grounds as given by the best authorities on such matters, it is hoped they may be of service to some of your readers who have in view the planning of a HOME.

"The ground plan given is of the eastern position of the plot (the whole being five acres in extent). The house shown at A is placed over two hundred feet back from the street. (The house "B" built recently was not completed when the

place was laid out), and the entrance gate is about sixty feet from the north east corner of the property.

"The pictures Nos. 1, 2, 3, 4, 5 and 6 respectively are views taken from the positions marked by corresponding figures on the plan. No. 6, however, is merely to give some faint idea of the appearance of the Tartarian Honeysuckle in bloom at maturity when not spoiled by injudicious pruning. This shrub now measures nineteen feet in diameter and is fourteen feet high in the centre.

"The writer laid out these grounds and planted, or superintended the planting, of every tree and shrub shown in these photographs."

In volume XV of this journal, page 195, we give a sketch of the life of Mr. Beall, who has now been on our directorate for twenty-two years.

Mr. Beall was born in Cornwall, England, in 1828, and came to Canada in 1840, settling at Lindsay in 1860. Recently he has been appointed organizing director of Affiliated Horticultural Societies, a work in which he has rendered excellent service both to the societies concerned and to our Association.

Early in life Mr. Beall became somewhat of an expert in perspective drawing. This led to mechanical and architectural drawing, *i. e.*, that branch of architecture known as Rural Architecture. A careful and systematic study of this branch of the subject led to a critical study of rural homes and its surroundings, which of course included what is



FIG. 1794. VIEW AT 5.

known as Landscape Gardening. Fortunately about this time he had the opportunity of consulting some of the publications of that king of landscape gardeners, the late Humphrey Repton and also other excellent English authorities, and a little later the work of the late A. J. Downing, of Newburg, N. Y., who, he was pleased to find,



FIG. 1795. VIEW AT 2.



FIG. 1796. VIEW AT 4.

corroborated his previously formed opinion of the trustworthiness of the principles of this art as laid down by the English authorities, and especially by Repton in his rules for placing the house, the entrance to the grounds and the approach; for therein lies the key to success in this art. The laying out of the grounds after these points are settled is comparatively easy work. But



FIG. 1797. VIEW AT 1.

then a thorough knowledge of the character, forms, habits, color of foliage, etc., etc., of all the trees and shrubs required, together with the knowledge of the effects of flower beds, etc., in certain situations, is absolutely indispensable.

There is at Lindsay, on the right bank of the river just above the town, a very beautiful

cemetery. It is admired by every visitor, and is noted far and wide for its trees and shrubs, many of which are of rare beauty, and are in great variety. The owners, a joint stock company, got an expert from Rochester, N. Y., to lay it out, and it was fairly well done. The company also gave this man an order for all the trees, shrubs, etc., required (a place for each one was marked on the plan), all of which was duly received and the bill



FIG. 1798. HOME OF MR. THOS. BEALL. VIEW AT 3.



FIG. 1799. VIEW AT 6.

for which was (about twenty-five years ago) \$127.00. In two years there was not a dozen living specimens in the cemetery. It was a complete failure principally because the stock furnished was unsuitable for the situation. At the request of the company Mr. Beall then undertook the selection and purchase of the stock required and also the supervision of the planting and the subsequent care of the same for one year. The cost of the work was less than one half of the first transaction, and the result is as stated in the two first sentences of this paragraph.

AMONG apples and pears certain sorts assume naturally very different forms of growth. Some grow close and compact, some horizontally and crooked, while others are slender and thin in their growth, and are indisposed to put forth lateral shoots. Winter Nelis Pear is of the latter class. In such a case it will be necessary to prune closer than in the others at the winter pruning. If the

thinning of the shoot is attended to in the summer, and gross wood in the middle of the tree kept under, winter pruning will be reduced to a minimum. Trees brought into a bearing state by the above system of pruning and training will not require root-pruning so often as if pruned on the cut-and-hack system which unfortunately prevails among some in the present day.—*Journal of Horticulture*.

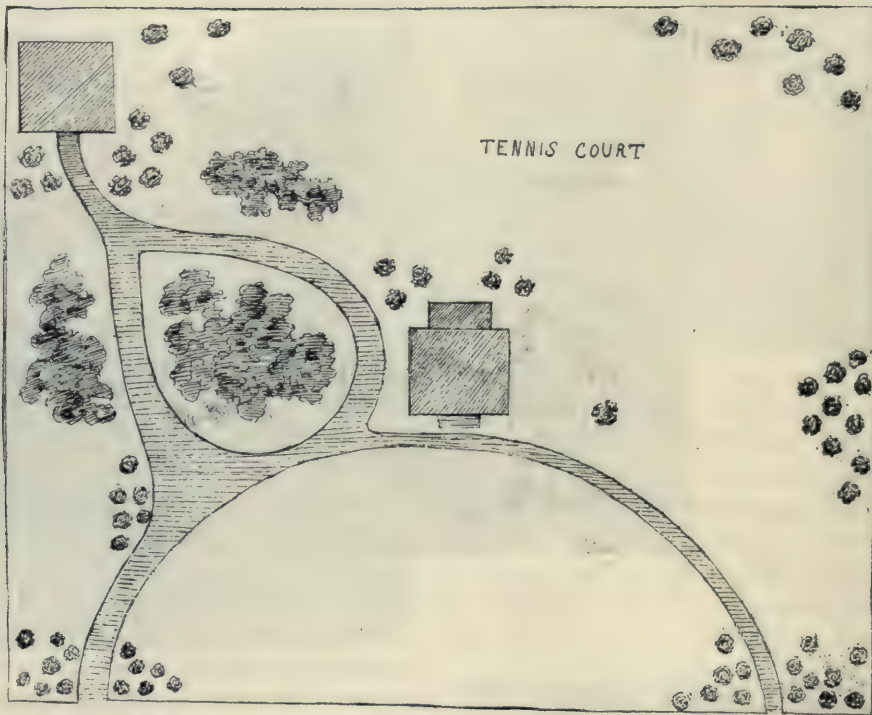


FIG. 1800. PLAN OF GROUNDS.

THE HOME AND ITS ENVIRONMENT.

OUR Canadian farmers and fruit-growers give too little attention to the decoration of their home surroundings. Every one may not be able to build an expensive house, but even a neat little cottage surrounded by the adornments of nature may become more beautiful than a mansion unadorned as to environment by either nature or art.

In the beautifying of a home, trees are essential. They are not only beautiful in themselves, but often serve to shut out objectionable views, to afford shelter from high winds and also to give shade from the heat of the sun. In grouping trees for ornamentation one should become quite familiar with the various forms and characteristic features of trees, for if a man knows nothing of the

shape which a tree will take when fully matured he may make serious blunders.

One mistake commonly made is planting too close. This very often shuts out views

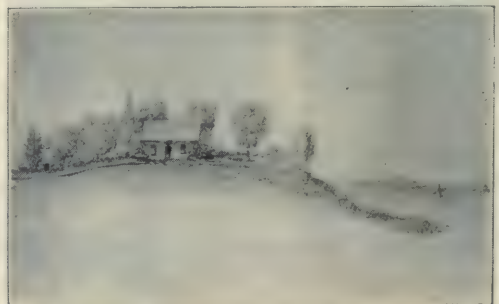


FIG. 1801.

HOUSE FIRST ON AN OPEN PLAIN IMPROVED BY PLANTING TREES, ETC.

of interest and beauty. The trees also become so entangled with each other that their individuality is entirely lost. They must all either be cut down, which means to begin again, or the least valuable thinned out and the remaining ones pruned and trimmed into proper shape. This is by no means an easy task nor is it a desirable one. Prevention is the best cure and I would therefore advise no one to plant too closely in the start.

Trees which are grouped for their special beauty should be so placed that the tallest trees will be in the centre, while around them may be planted the lower and more rounded ones. Trees with heavy foliage should not be planted by those with light foliage, but something of an intermediate tone should intervene.

For small places one should depend mainly on shrubs and by a little careful selection from the different families grand masses of bloom may be had throughout the season. Such shrubs as spirea, weigela, deutzia, hardy hydrangea, Japan quince and double flowering almond produce a magnificent effect when grouped together.

A broad, open lawn in front of the house has a pleasing effect. Trees or shrubs may be planted at the borders but never in the centre. A lawn should have a restful appearance to the eye, and if shrubs are scattered about the lawn this effect is destroyed. On the other hand, if the eye passes over a lovely, open green sward and then rests on



FIG. 1802. TURN IN ROADWAY.

masses of well grouped shrubbery the effect will be very pleasing. Groups may also be placed at the entrance or on the bend of a driveway, so that on entering you do not see all views at once, for if everything is seen at one glance your curiosity is soon satisfied, and it is therefore much better to have your trees and shrubs arranged so that from different points different views may be obtained.

Climbing and trailing shrubs are very useful and beautiful for covering cottages, verandahs, walls, trellises, etc. The cooling shade they afford to verandahs cannot be excelled by any artificial means. This is no doubt due to the excessive evaporation of moisture from the leaves. Perhaps one of the finest vines for covering a verandah is the Virginia creeper. It affords shade quickly and in the fall the leaves become a rich crimson. For covering stone or brick walls no other plant can excel the Boston ivy. The leaves overlap one another and form a dense sheet of dark green, turning to crimson in the autumn. The first winter it may require a little protection from the frost, but when once it has required a good growth no further risk need be feared. The Clematis Jackmanni is a very beautiful climber for a verandah where a trellis may conveniently be put up. Its flowers are large, violet pur-

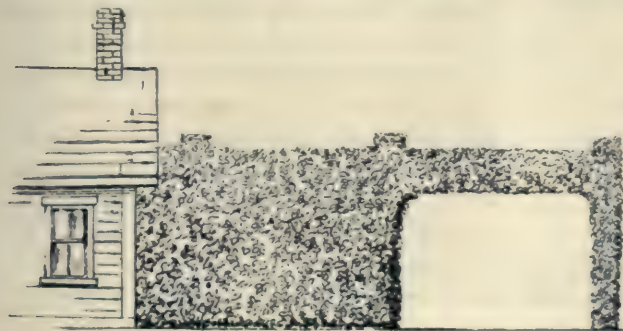


FIG. 1803. WALL WITH CLIMBING VINES.

ple and remarkable for their velvety richness. It should be planted in a deep, rich, sandy loam, well mulched in the winter by rotted manure. The bloom attains its highest degree of perfection if the plant has partial shade and liberal supply of water at the roots.

A home is not a home at all unless it is at least surrounded by a few of the beauties of nature. Her beauties are not hard to find, for man with his eyes open cannot help see-

ing them every day of his life. In beautifying your home the best guide you can find is nature herself. Just notice the woods in all their autumn glory, how many thousands are massed together and yet all is perfect harmony. We should therefore try not to mar nature's ideals, but rather to join with her in seeking to make our Dominion beautiful.

CHARLES ERNEST WOOLVERTON.

O. A. C., Guelph, April, 1900.

COOL STORAGE FOR APPLES.

SIR.—Could you give us in the Canadian Horticulturist a simple plan for a cheap building capable of holding from 100 to 500 lbs. apples, where the temperature could be lowered by a sub-earth duct or other means.

Last October we had very warm weather after the apples were gathered and what were in open buildings were much injured.

Some form of building in which the temperature might be partly controlled at least, would be of much value to the fruit growers.

J. C. GILMAN, Fredericton, N. B.

We have in Ontario and in New York State, at shipping points here and there, large apple storage houses, the walls, floors and ceilings of which are made impervious to cold or heat by dead air spaces, and by the free use of saw-dust; places where in fall and winter season cool air may be admitted from the outside when needed, and frost cannot enter when apertures are closed. Then we have some ice cooled store houses, which have been built for summer use in storing pears and peaches, but we do not know of one that would just meet the wishes of our subscriber so well as one recently described in Country Gentleman as follows:—

Our readers will understand that the details of this plan can be modified considerably where circumstances demand. In fact, this scheme would naturally not be adopted except on perfectly level land. Sloping land is very convenient for building such a stor-

age house. When one has a good slope he should make the front of his house on the lower end of the incline; he should make the floor just high enough so that barrels may be easily discharged from the wagon on to the platform at the front door; and he should let the building run back into the ground just as deep as the slope makes necessary. Putting the house partially below the ground will help to regulate the temperature.

The main storage room of the house herewith illustrated is 36 by 38 feet, and will hold just about 1000 apple barrels when full. They will then be piled up three tiers high, which is not an inconvenient arrangement. Apple growers have generally found it best to store apples in barrels. The house also has a sorting and packing room 10 by 36 feet, all of which space will be needed. This packing room stands next to the outside



Fruit Storage House—Side.

FIG. 1804.

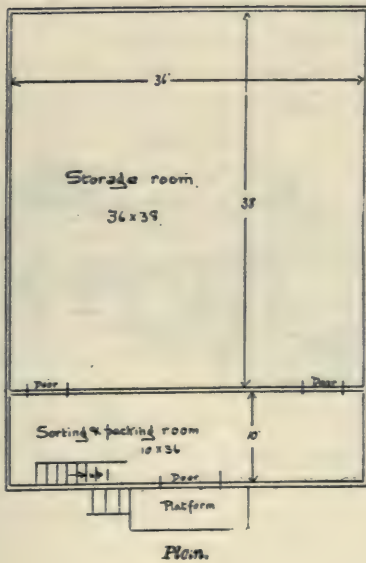
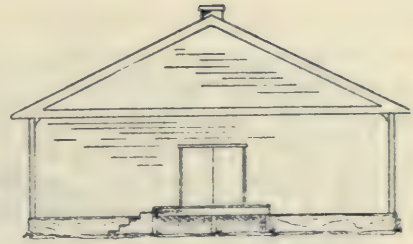


FIG. 1805.

door, and the only entrance to the storage room is through this sorting room. This protects the storage room from outside temperatures, and permits work to go on, either bringing in fruit or taking it out, without disturbing seriously the atmosphere in the storage room. The space overhead will be needed for storing barrel stock, &c.

The front (double sliding) door should be 6 feet wide, and the two inside doors should be 3 feet 6 inches. It will be an advantage to have two inside doors, arranged as shown in the plan. If a single door is used between the two rooms and is put in the middle of the partition, it will admit more drafts of outside air to the storage room, and will not be so convenient in handling barrels from one room to the other.

No ice or artificial refrigeration is needed in this house, at least not for any place north

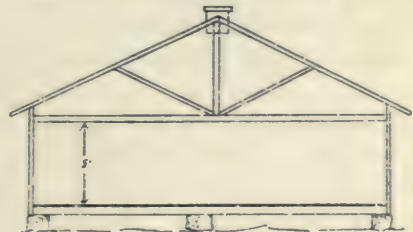


End Elevation.
FIG. 1806.

of Virginia. The temperature can be easily controlled by the windows and the ventilators shown in the various elevations. This method has been tried by hundreds of fruit growers, and has been found much superior to ice storage under most circumstances.

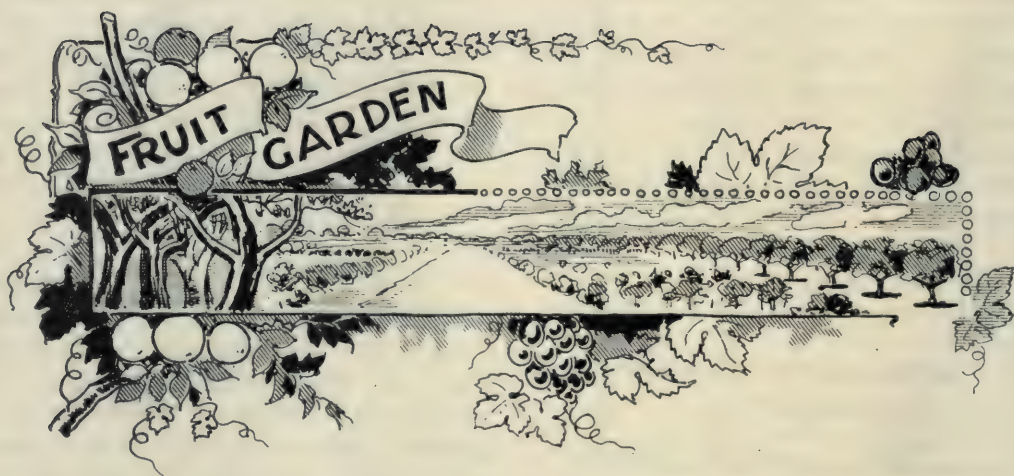
The walls should be double-thick. Inside they should be boarded with matched lumber on the studs, and then closely ceiled on top of this. The ceiling should also be heavily painted. This is absolutely essential. Outside they should have a sheeting of inch lumber and a coat of building paper on top of this, the whole to be covered with matched novelty siding. This may seem a good deal of material to put into the walls, but it will pay. Still, one or two layers may be omitted "at the owner's risk."

This house will cost from \$800 to \$1200, depending on who builds it, and where.



Section.
FIG. 1807.



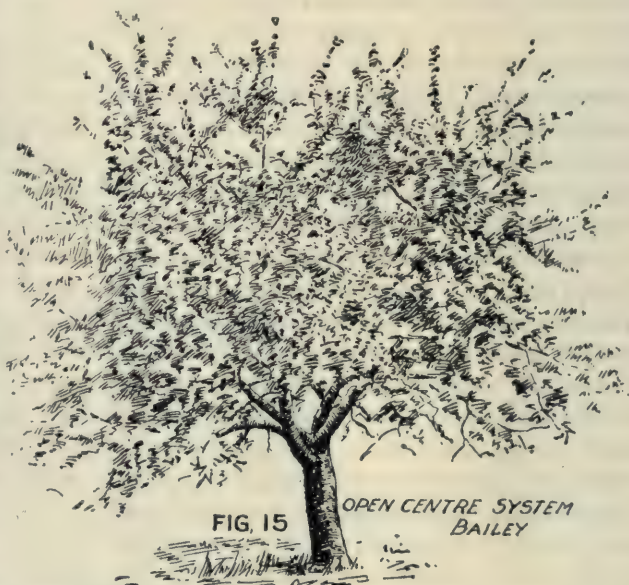


FRUIT CULTURE.—IV.

PRUNING.—As the matter of laying out the orchards and planting were dealt with under “General Principles,” it may be assumed now that

the trees is planted, and the question is,—how prune? If the average orchardist realized the importance of early pruning, of careful and systematic shaping of the tree during the first few years of its life, there would not be so much injurious slashing and butchering of bearing trees. Directly the tree is planted its future shape and habit should be formed to a certain extent. Severe cutting back has got to be accomplished with the newly-planted tree that the top may correspond with the shortened roots, but let the cutting back be on some system. There are two types to be aimed at, the one represented in Fig. 15, of the open and spreading character; the other in Fig. 16, that where the leading shoot of the young tree is trained up. This latter plan gives a stronger and a better tree, but the form is not practicable with all varieties. In such a plan the leader is selected and

trained from the start as in Figs. 17 and 18, the other branches being shortened back so as eventually to form a well-balanced head. In the other plan three or four branches are



allowed to form a head and the centre is kept more open. Great care should be taken in shaping the top, not to allow the formation of a crotch. A tree of that kind

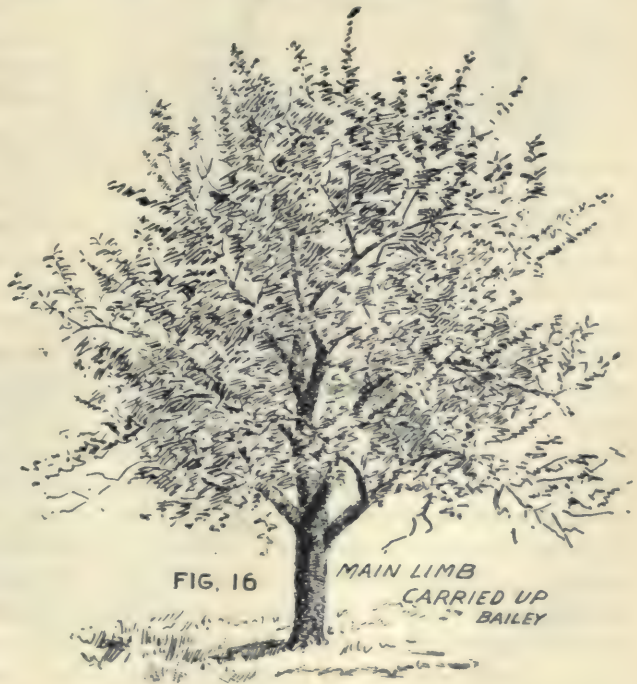
will be likely to come to grief in a high wind or under a big load of fruit. The branches should be taken alternately so as to allow the strain to be divided and not to fall on the main crotch. See Fig. 19.

The head should start about four feet and a-half from the ground, Figs. 20 and 21 showing the shortening back process of a young tree which had got too tall.

During the first summer's growth, if proper care is exercised and undesirable shoots pinched off, the tree (Fig. 19) will, by the fall, be like Fig. 22, which may be considered a well formed head. When the general shape of the top has got well established, and this should be done by the end of the first three years, all the pruning required will be the removal of limbs that cross or rub each other, or that make the head of the tree too dense. The best time for pruning in Ontario is probably at the close of the winter, and just before the sap starts. By systematic work, as suggested, a sharp knife will do all the pruning, and the tree will be spared the shock of losing large limbs. It is necessary, however, sometimes to take off good-sized branches, and there is a right way and a wrong way of accomplishing such work. The wrong way—often practised—is to saw off the limb, leaving a stub of wood sometimes several inches long. Without going too deeply into this question it may be said briefly that the healing of a wound is entirely dependent on the flow of the cambium, or sap, layer. The following illustrations from Prof. Bailey's excellent publication, "The Pruning Book," will point the moral and adorn the tale. A limb removed as in Fig. 23, simply means the existence of a dead stub, through the base of which rot is likely to attack the tree. Fig. 24, where the limb is cut close to

the tree, shows that the healing process from the flow of the cambium layer is rapidly taking place. Large limbs should be removed just before growth begins, and the wounds should be coated with paint. But, most important of all, "*the cut should always be made close to, and perfectly even with, the outline of the trunk, without regard to the size of the wound made.*"

CULTIVATION OF THE ORCHARD.—In the chapter on "General Principles," this matter has been treated at some length, but the question arises, what crops may be grown in the orchard till it reaches bearing age? Grain and hay should certainly *not* be, as, apart from the plant food they take from the soil, the amount of moisture they rob the trees of is incredible. If such crops are grown, there should be a space of at least four feet of cultivated ground next the tree row. The best crop for the young orchard would be root crops, potatoes and corn, and every year the trees should have more room. Fig. 1, 2 and 5 show how extensive is the





root system of trees, and it should be remembered that unless very high manuring and thorough cultivation are given, the trees must inevitably suffer if the roots of other crops are extending over their feeding grounds. After the trees are in bearing it would certainly be wiser to give the trees all the ground, keeping the ground cultivated with the harrows or cultivator. About August 1st, when growth has ceased, it is a good plan to plow up to the trees and sow crimson clover, rye, or some other cover crop, to take up the root moisture which

might induce an undesirably late growth in the trees, and to form a protection for the winter. Such a crop, however, should be plowed under very early in the spring, not left to evaporate moisture and be plowed under with more or less injury to the feeding roots of the trees. As to the question of sod in the apple orchard, it might be confidently said that the best and most successful orchardists are unanimously against the practice. Insects and fungous diseases are usually worse in such orchards. They seldom get what they should, viz. : a generous

top dressing of manure, and, worst of all, there is an increasing tendency towards a surface habit of the roots. Fig. 2 (of this series) shows where the roots are in sod. In a dry season such trees decidedly suffer, and, if left too long in sod, the eventual plowing becomes a difficult and very destructive process.

As to the distance in planting something depends on the nature of the soil and the locality. With vigorous growers and a good soil, forty feet apart is better than a less distance. From thirty-five to forty feet will be none too far, if every care is given to the orchard. The latter distance will pay for itself by the additional convenience in spraying, cultivating and picking, and by the improved quality of the fruit.

THINNING has not been touched on, though it will be dealt with fully under the peach. The thinning of apples has been successfully attempted in New York and Massachusetts. The work was done by hand, and at a cost on large trees of from 30 to 80 cents a tree. With good varieties it would undoubtedly pay where the trees were loaded, inasmuch as it would not only increase the size of the fruit and lessen the drain on the tree's vitality, but it would largely do away with the 'off year' which is simply a result of overbearing.

VARIETIES.—For a specialized list, suited to the various counties of Ontario, readers are referred to pages 141 and 142 of the report of the Ontario Fruit Growers' Association for 1893.

For the coldest sections of the Province the following may be recommended :

SUMMER.—*Yellow Transparent, Duchess.*

AUTUMN—*Gravenstein, Alexander, Wealthy.* St. Catharines, Ont.



FIG. 23.
Improper cutting of a limb

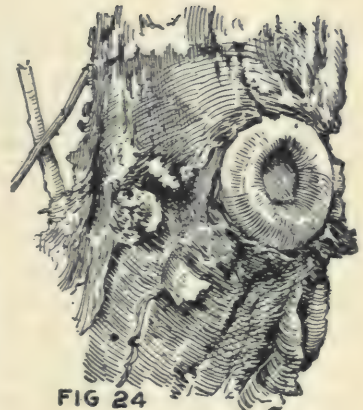


FIG 24
Proper cutting of a limb.

WINTER—*Pewaukee, Scott's Winter, Golden Russet.*

For the milder districts :

SUMMER—*Yellow Transparent, Duchess.*

AUTUMN—*Gravenstein, Colvert, Wealthy, Ribston, Fameuse or Snow.*

WINTER—*Northern Spy, Baldwin, Ontario, Greening, Cranberry Pippin, Golden Russet, Blenheim Pippin, Stark and Ben Davis.* The two last need not be included in a list for home use.

FUNGI AND INSECTS—The insects chiefly attacking the apple are the codling moth, the canker worm, tent caterpillar, the borer, the oyster-shell bark louse and the apple louse. Instructions on the methods of fighting these pests will be found in the 1896 and 1897 report of the Superintendent of Farmers' Institutes, pp. 180 to 196.

Apple Scab, Fig. 24 A—Leaf blight, canker, etc., are referred to in the Government Bulletin "Instructions in Spraying." A careful examination of the report of Superintendent of Spraying will convince orchardists that apple-scab can be successfully controlled by faithful and intelligent work.



FIG. 24A Apple-scab.

M. BURRELL.

DWARF PEARS.

THERE is one special advantage in growing dwarfs, over standards, and that is the ease of gathering the fruit. Few, however, seem to have the best success with a dwarf pear orchard, owing to common faults of treatment.

These are (1) *planting on poor soil*. A thin light sand is the worst possible, and would not yield fruit of large size, nor any quantity of it. A sandy loam will do very well, but a rich clay loam, well drained, is best of all.

(2) *Lack of Cultivation*. No worse treatment could be given than to leave a dwarf pear orchard in sod, or without cultivation. A standard pear tree strikes its roots down deep, and may endure neglect and yet give good crops of fruit, but the quince roots, on which the pear is dwarfed, are surface feeders, and cannot thrive without good tillage.

(3) *Lack of Manure*. Here is a common fault with all orchards, and the pear is perhaps more often neglected than the apple or the peach: as a standard, it will endure much abuse and neglect, yet succeed fairly well. The dwarf, however, is different. Its quince roots do not reach out very far to collect nourishment, and unless the soil about the tree is both well cultivated and made rich in fertility, little result may be expected in fruitfulness.

C. S. Mills, of Allegan Co., Michigan, has a fine dwarf pear orchard of 1200 trees, a great commercial success. He speaks as follows on this question of cultivation and manure:

"Plow up to the trees in the Fall, and away from them in the Spring: thus the ground is kept nearly level during the working season, and when cold weather comes, the ridging up assists drainage, and also helps protect the tree roots. For the first three years almost any hoed or cultivated crop may be grown among the trees; after that, they should have all the ground to themselves—

with regular harrowings up to about August 1st. At the last cultivation, oats, Crimson clover, or some other green crop may be sown to hold the ground and plow under in the Spring: One word as to plowing: do it either before the trees blossom, or after; never work the ground when the trees are in blossom.

"The manure question is one that every pear grower has his own notion about. Most growers believe that stable manure is bad for pear trees—that it causes the blight—that the trees must be kept back rather than pushed along. Such is not my idea. For ten successive years these trees had a good warm coat of strawy manure applied in the fall or early winter. For the last six years they have had nothing. Blight has bothered us but little, in all this time. But the trees grew, and are still growing; what's more, they bore young, and are still bearing."

(4) *Neglect of Pruning* is another serious mistake of dwarf pear growers; or if they prune it is without a system, or indeed any definite idea of form or symmetry. A dwarf tree under such treatment soon grows too high, and when laden with fruit soon breaks off at the point of union. Proper treatment of a dwarf demands annual and vigorous cutting back of all new wood if over a foot in length. The idea in mind for a dwarf pear should be pyramidal, thus causing all the heavier branches to grow near the ground, and the fruit to be within reach.

Figure 1808 gives a good idea of the general form which we should aim at in pruning our dwarf pears, and should be persistently carried out.

(5) *Unprofitable Varieties* are another cause of failure. The Bartlett, for example, is not a success as a dwarf; while on the other hand the finest Duchess, Anjou, Clairgeau and Louis Bonne, grow on dwarf stock.—



FIG. 1808.

These last are four varieties which seem to take with our English relations, and should be the chief varieties now planted for

export. As will be seen from Prof. Robertson's report, A No. 1 pears, $2\frac{1}{2}$ and 3 inches in diameter, brought as high at \$1.40 per case or about 20 lbs., or the equivalent of about \$14 per barrel, for those which arrived in good condition. The great question is

how to control the temperature of the ship in-transit; and if once we are guaranteed that the temperature will be kept between 34° and 40° , for example, we can grow pears for the English market with confidence of great profit.

TREATMENT FOR SAN JOSE SCALE.



SERIES of meetings of fruit growers has been held in various parts of the Niagara District to consider the modes of treatment of orchards for destruction of the scale. At Grimsby the meeting was presided over by Mr. M. Pettit, of Winona, who gave an outline of the measures already adopted by the Department to cope with this pest.

Prof. Fletcher, of Ottawa, gave some details concerning the terrible nature of the scale, and advocated treatment with whale oil soap as better than either kerosene or crude petroleum. This soap is made from caustic potash and fish oil, and is used in the proportion of two pounds to one gallon of water. The cost of treatment would not exceed 10 cents a tree in an orchard of ordinary sized trees.

Prof. Owen, of Catawba Island, Ohio, said that in his experience the *whale oil soap* was quite effective even on its first application, and after four years' treatment orchards were 20 per cent. more healthy and vigorous than when treatment was begun. Indeed the whale oil soap seemed to be in a measure a fungicide as well as an insecticide, destroying the aphid, preventing leaf-curl of the peach, and so clearing the trees of fungi, that the fruit on treated trees attained a larger size than on those untreated. The cost of treatment—ten cents a tree—

was a good investment, often paying 500 per cent.

The time to treat with whale oil soap is in the spring, during a period of two or three weeks, from the time the buds begin to swell until out in bloom. One good treatment at this time is usually considered enough.

The method of treatment is to get large wagon tanks and put a good pump at the back; the driver stands on a platform at the rear and does the pumping; two lines of hose are used, with which about 150 trees per diem can be treated. Of course every inch of the wood must be covered.

The Cherry aphid may be destroyed with this soap, which will, in certain seasons, be a great boon to cherry growers.

In the *preparation* of the mixture, first heat the water in a large agricultural boiler, holding say one barrel of water, then when boiling add the soap. If possible apply it hot.

After many questions had been put by the audience and answered, the following resolution was unanimously agreed upon, and ordered to be forwarded to the Ontario Minister of Agriculture, viz. :

"That in the opinion of this meeting the Government should in every way possible encourage the treatment of trees, infested by the San Jose Scale, the Black Aphid or Curl Leaf, by the application of whale oil soap or other approved remedies; also that the inspection of orchards as hitherto practised be continued."

OUR FRUIT IMPORTS.

STATEMENT SHOWING THE VALUE OF THE UNDER NAMED FRUITS ENTERED FOR CONSUMPTION IN CANADA DURING THE YEARS NAMED.

FRUIT—GREEN.	1890	1891	1892	1893	1894
	\$	\$	\$	\$	\$
Apples	239,332	55,118	80,369	35,165	50,526
Berries—Straw., Rasp., etc.....	*72,399	34,280	33,463	32,923	46,751
Cherries.....	8,033	12,369	11,996	11,464	9,616
Cranberries	228	26,905	41,735	29,363	49,131
Currants	492	83	680	35	27
Grapes	79,009	79,452	69,975	70,207	77,101
Oranges and Lemons	456,248	670,127	626,453	555,363	774,612
Peaches	†107,636	32,039	80,768	61,982	66,764
Plums.....	‡24,582	21,219	24,184	20,286	30,315
Other dutiables.....	66,578	43,332	75,191	65,364	943
Quincies	1,882	1,275	1,287	1,274	73,942
Blue and other wild berries.....	include above	1,995	137	2,781	1,473
Bananas.....	271,445	324,790	298,080	437,181	504,331
Pines.....	53,145	68,873	59,282	67,998	89,081
Guavas .....	.....	576	509	720	973
Olives and Apricots .....	.....	13	\$75,250	.....	.....
Raisins.....	402,869	427,997	329,311	311,409	326,939
Filberts and Walnuts	65,089	142,531	130,059	139,095	130,144
Total value of all fruits imported.	(Dutiable....	Not given in 1890, 1891, 1892.		1,817,450	2,102,099
	Free			508,680	595,868
	Total			2,326,130	2,697,967

* Includes Cranberries. † \$105,330, imported free of duty. ‡ \$23,363, imported free of duty.

§ There is something wrong in this. They were free, and probably bananas make up the most of the \$75,000.

FRUIT—GREEN.	1895	1896	1897	1898	1899
	\$	\$	\$	\$	\$
Apples	46,554	52,134	36,974	76,750	39,238
Berries—Straw., Rasp., etc.....	47,987	32,909	63,528	57,956	83,790
Cherries.....	9,767	7,626	8,609	9,342	12,332
Cranberries	9,979	32,286	19,118	18,798	36,400
Currants	59	256	546	71	18
Grapes	56,118	65,184	47,681	56,020	51,841
Oranges and Lemons	749,264	652,150	592,138	687,966	799,958
Peaches	38,092	99,565	52,166	43,424	66,526
Plums.....	22,688	26,181	24,131	26,101	28,824
Other dutiables	60,838	54,066	45,387	56,508	49,178
Quincies	487	590	394	356	276
Blue and other wild berries	963	477	563	636	425
Bananas.....	470,457	489,812	402,121	460,450	513,250
Pines	62,456	52,471	73,046	47,197	51,371
Guavas.....	872	477	373	2,960	425
Olives and Apricots .....	.....	.....	.....	.....	.....
Raisins	353,631	330,760	327,509	404,937	412,168
Filberts and Walnuts	116,022	121,493	110,245	127,627	172,229
Total value of all fruits imported.	(Dutiable....	1,949,102	2,012,337	1,754,803	2,469,859
	Free	535,248	476,103	476,103	566,707
	Total	2,484,350	2,554,272	2,230,906	3,036,565

I hope the preceding will be useful to your readers. I have excluded dried fruits, except raisins and nuts, because we do not produce them, with only an exception as to apples, pears, peaches and apricots, and these are not given, except apples, which are not of any large amount. Nuts are included because we are able to grow them, and ought, to while we might try raisins.

All our green fruit is imported from the United States, except grapes, oranges and apples.

Curiously enough we have brought apples from Australia. Thus in 1895 the importation was \$1,277; 1896, \$4,509; 1897, \$976; 1898, \$0; 1899, \$0.

This year we have had the first direct importation of oranges from Jamaica into Ottawa.

It is peculiar that we are prepared to pay for taking oranges and lemons to England and then freight them back.

We import of this fruit from—

	G. B.	U. S.	B. W. I.	Foreign W. I.	Spain.	Japan.	Italy.	Australia.
1895	\$93,928	\$376,166	\$3,464	\$878	\$6,596	\$2,316	\$257,160	\$2,874
1896	165,137	330,760	6,541	456	6,325	2,982	150,527	1,137
1897	115,335	306,871	6,728	124	....	....	144,207	....
1898	73,174	439,206	14,171	180	....	5,031	137,535	1,963
1899	93,800	473,194	15,570	117	4,080	3,811	205,853	1,603

As to the grapes which are imported from England and other countries other than the United States are Malagas, and are not grown here. Of those from the United States it is impossible to tell what part is competitor against our own grapes. However, the record is this way;

G. B.	U. S.	G. B.	U. S.
1890	\$31,331	1895	29,711
1891	32,847	1896	35,577
1892	29,175	1897	20,393
1893	31,979	1898	21,130
1894	36,181	1899	23,226
			26,068
			29,007
			26,671
			34,097
			27,501

It would appear that notwithstanding the general growth of trade, the importation of grapes is not growing, and perhaps means we are supplying our own market more fully than "has been."

G. H. FAWCETT.

Ottawa.

IN GERMANY certain restrictions have been put upon the importation of American fruit owing to the San Jose Scale scare. Prof. L. Reh, of Hamburg, has conducted a number of experiments for the purpose of determining the danger from the packing of imported fruit, with the general result that living scales were very seldom found in such ma-

terial. Experiments were also instituted to determine how long the scale insects would live when removed from the fruit and carefully transported to other fruit or to other situations. The experiments indicate that death usually results within a short period after such removal.

THE EXPORT OF TENDER FRUITS.

WE regret that the trial shipments of tender fruits which have been conducted for the last year by the Department of Agriculture at Ottawa are to be discontinued at the present time. We are aware that the Paris Exposition is important, but to us it is not nearly as important as the extension of the markets for our grapes, peaches, pears and summer apples. Even the shippers at Grimsby who have furnished the fruit for the three years past are not confident enough in present conditions to continue the work on their own account, for while some shipments have sold splendidly others have been spoiled in transit, and the total result of the season has always been loss. Fortunately for the shippers the Department guaranteed them the market price at home, a bare return however for the time and expense of such careful selection and packing.

Just one thing is lacking, and, that granted, the fruit growers of the province would begin exporting these fruits at their own risk, viz.: *a guarantee of safe carriage within certain limits of temperature.* Hoping to secure this for the public benefit we called a meeting of growers who have been concerned in previous shipments to discuss the situation. The following resolution was agreed upon and forwarded to the Hon. Sidney Fisher, viz.:

Resolved, that this committee desire to express to the Minister of Agriculture, The Hon. Sydney Fisher, their high appreciation of the efforts made by his department in the way of experimental shipments of fruit during the past three years; but they would exceedingly regret the discontinuance of these efforts to introduce our fruits into the English markets at the present time. They would humbly request that the department would

still further encourage the development of the export trade in tender fruits by guaranteeing safe carriage of the same within certain degrees of temperature, and in a compartment especially prepared for the carriage of fruit only.

They would further request a personal interview with Mr. Grindley and with Mr. Robertson to consider details of methods of operation.

The following extract from the American Agriculturist gives the experience of a writer in cold storage of some of these fruits, and may help us in determining the proper temperature for the ocean transport.

"Beginning with plums; those varieties that are more firm, not so juicy to begin with, and ripen slowly, are the ones that keep the best. The most desirable temperature for plums is 34 degrees. They will keep well for two or three weeks, and then they begin to decay. They seem to deteriorate about the stone and go very quickly, so that two or three weeks is as long as they should be kept in cold storage. The main object in storing fruit of this character is simply to keep them long enough to avoid gluts in the market, and to that end only can cold storage be used in storing plums, peaches, cherries, etc. Peaches do best at a temperature of about 38 degrees. There is no fruit more tender and that should be more carefully handled than the peach.

"The temperature for pears is from 38 to 40 degrees for fall, and from 34 to 35 degrees for winter pears. The varieties which have large cores seem to keep best. The Vicar and Winter Nelis keep in very good condition for two or three months. There is a tendency in pears to decay about the core while the outside may look well.

"With most varieties of apples, the temperature should be kept as nearly as possible at 32 degrees in a dry atmosphere; that is, an atmosphere that is not moist enough to aid fungous growth. Some varieties cannot be submitted to so low a temperature, and it is still an experiment as to just the exact temperature for the different varieties. Jonathans, for instance, if stored in a temperature of 32 degrees in nearly every case have tended to produce what is known as scald. In picking apples for cold storage, those fruits keep the best that are not too ripe—they should be just a trifle green. Use only perfect fruit, sorted properly, graded well and packed carefully."

But the difficulty is to get a temperature guaranteed on ship board, or if guaranteed, to be honestly kept.



ASPARAGUS BEETLES.



AMONG the recent arrivals of new insect pests in Ontario are two small beetles which have done harm both in Europe and the eastern United States. That these beetles are capable of doing much damage to beds of asparagus may be seen from a study of the records of their depredations in the United States. Six years after the arrival of the first beetle—the common asparagus beetle—the loss in Queen's Co., N. Y., alone in one year amounted to \$50,000, and frequently since asparagus crops have suffered severely in many of the infested sections of New England and the northern central states. Not only were the marketable beds badly injured, but the new beds also were seriously attacked, and in many cases destroyed. Illustrations of these two beetles are to be found on page 35 of the Agricultural College Report just issued.

In 1898 the asparagus beetles reached the American side of the Niagara River, and it was then predicted that the Niagara region of Ontario would soon feel the effects of the invasion. Sure enough, the beetles appeared in several localities as far west as St. Catharines in the spring of 1899, and their presence may be confidently expected in asparagus gardens over a still wider area in the spring of 1900.

The two beetles which feed on asparagus shoots are quite unlike in color: the common asparagus beetle (*Crioceris asparagi*) has steel-blue wing-covers, marked with lemon-colored splashes, and bordered with the same color, while the 12-spotted asparagus beetle (*C. 12-punctata*) has orange-red wing-covers, each marked with six black spots. The grubs of the two species are even more unlike than the adults are. The grub of the former is dark grey in color, while that of the latter is orange, and on ac-

count of its color resembles the grub of the Colorado beetle.

The habits and life history of the common asparagus beetle are much better known than those of the 12-spotted species. The eggs are laid soon after the appearance of the beetle in the early spring, usually on the stalks of the new shoots. They stand out at right angles to the stalk, are about one-twelfth of an inch long, and of a dark brown color. The grubs, which hatch from the eggs in about a week, feed upon the young succulent shoots for about two weeks, when they descend into the ground, and change into pupae within dirty cocoons. In another week or ten days the full fledged beetle emerges to lay eggs for another brood. Thus it will be seen that the common asparagus beetle completes its life history (from the deposition of the eggs on the stalks to the time the adult beetle appears) in about four weeks or one month.

In the case of the 12-spotted asparagus beetle, the eggs have been seldom seen, and the habits of the young grubs are not therefore understood. It is supposed, however, that the grub feeds during a part of its existence in the berry, and descends to the ground to pupate. In Europe it is said to pass the winter in the pupal condition.

REMEDIAL TREATMENTS.—A very important point to remember in the fight against the asparagus beetles is the destruction of all stray and volunteer asparagus plants in the neighborhood of the beds. If this is done the beetles cannot deposit eggs on plants outside of the beds, and no infestation of the beds can take place from this source.

Another important point is the spraying of the beds twice or three times after the cutting season with Paris green, for if the late broods are neglected and permitted to in-

crease, then the number of beetles wintering over will be large and the damage to the spring shoots will be serious.

There are two or three practicable remedies for the prevention of the destruction of the shoots by the grubs of the beetle: 1. Cut all asparagus plants about the first of May and cut the new shoots regularly every few days. By the adoption of this plan the beetles are forced to lay their eggs on the new shoots, and as those are cut every few days further development of the grubs is prevented. 2. Permit some of the shoots to grow as traps upon which the beetles may lay their eggs, but destroy these every week and allow other stalks to act as traps to take their place. In this way the beetles are not allowed to develop, with the result that their numbers will decrease as the season advances.

It is very important that these new arrivals be well looked after, and prevented from spreading to other counties from Lincoln and Welland. From a study of the spread of the common asparagus beetle it would appear that it has followed the water ways into the interior of the country, although it has undoubtedly been distributed occasion-

ally by ordinary commercial means, viz., by railways, nursery stock, etc. Moreover, it is more likely to spread westward along the shore of Lake Erie than eastward along the shore of Lake Ontario, for the same climatic reason that the San Jose Scale takes more kindly to the Lake Erie counties than to the Lake Ontario counties.

In conclusion, two very interesting features may be mentioned in connection with the invasion of the Province by these asparagus beetles: 1. The two species have arrived at the said time, although the common asparagus beetle reached the United States twenty-five years before the 12-spotted species, and, as a rule, the former species has preceded the 12-spotted in the invasion of the States to the south of us; and 2, The 12-spotted species was the more abundant form last season in the Niagara district. Every report dealing with the depredations of the two species in the United States makes the assertion that the common form was always the more destructive and abundant.

WM. LOCHHEAD,
Professor of Biology.

Ontario Agricultural College,
Guelph, April 20, 1900.

JAPAN PLUMS.—Mr. C. M. Hooker, of New York, recently sent a lot of cold-storage Duchess pears to London, which returned \$13 to \$14 per barrel. The Japan plum, Wickson, is reaping golden opinions on the shores of Seneca Lake, N. Y. Some extra fine fruit produced by heavy thinning brought \$3 per 15-pound case in New York city, or \$12 per bushel, when Lombards were bringing but 50 cents per bushel. The Wickson has had the reputation of being a shy bearer, and Mr. Willard has hitherto

condemned it for that reason. He has now more faith in its productiveness. Red June and Burbank are the best market varieties of Japan plums for this section. Abundance is of fine quality, but not as good a shipper as the other two. Canned Burbanks are second in quality only to Reine Claude and French Prune. October Purple has been a disappointment to most growers thus far. All Japan plums need heavy thinning to be of good size. Thinning also lessens the rot. *Country Gentleman.*



ANNUAL FLOWERS.

IT is the object of this paper to give a few hints on the cultivation of annual flowers, especially to those who are not much accustomed to grow them. We, as farmers, do not pay enough attention to the cultivation of flowers and beautifying our homes. We are apt to get into the narrow rut of growing only what can be sold or eaten. We do not therefore enjoy



FIG. 1809. ASTER.

rural life to the full extent of our privileges. You say the farmer has no time to grow flowers; you forget that he takes time to grow anything he specially desires, and that the most successful farmers are those who have the most to do; they are also the ones that usually grow the most flowers.

More attention has recently been devoted to annual flowers, and many improved kinds are being introduced every year. In selecting varieties you must choose those best suited to your special location and requirements. Perhaps the most important con-

sideration is to select the kinds you love most. To be successful in the cultivation of flowers, you must have a love for them. It is best not to grow too many kinds at first. It is wonderful how our love for them will grow when we begin their culture. In the following notes I will refer to some of the most common and easily grown sorts, giving such hints as may be helpful to the beginner. If we want early flowers, it is best to start a part of our seeds in boxes in the house. For this purpose I make boxes any convenient length and width desired, usually about twelve by twenty inches and four inches deep, leaving cracks in the bottom for thorough drainage. Fill the box about two and a half inches deep with good fine rich soil. Any good garden soil will answer, but a compost of well rotted cow manure and sods is best. If the soil is of a heavy or sticky texture, mix in one-third sharp plastering sand; this should be put through a coarse sieve, using the coarse material that will not go through the sieve in the bottom of the box and fine soil on top, in which to plant the seeds. After leveling the soil in the box, take a brick and firm it down a little. Take a piece of lath a half

inch shorter than the width of the box inside, bevel off one edge V shaped, with this sharp edge make the little drill in which to sow the seeds, and use the other edge to cover them by pushing the soil in from either side and firming it down well immediately over the seeds. Several kinds may be planted in the same box. Put the drills about one and a half inches apart and sow quite thin. The firmer the seed the less soil should be used in covering. Nasturtiums may be planted to the depth of one inch, while pansies, verbenas, asters, dianthus, phlox drummondii, etc., should not be covered with more than a quarter of an inch of soil.

ASTERS for early flowering should be sown in the house early in April, when two inches high transplant to small pots, or flats, three inches apart each way. They are quite hardy, and can be transplanted to the garden when the peach trees are in bloom. They make better plants by transplanting once or twice rather than sowing the seed where they are to remain. In good soil the plants should stand twelve to eighteen inches apart. For later bloom, plant seed out doors as soon as the trees are out in leaf. Thoroughly cultivate the soil among the plants, and when they are nicely in bud give a mulch of coarse manure, cut straw or lawn clippings. This will keep the soil cool and moist during the hot weather, which is necessary if you want the best flowers.

DIANTHUS—hardy biennial, that flowers freely the first season, and gives a wonderful variety of colors. Seeds may be planted and young plants treated as indicated above for asters. When planting where they are to remain, they should stand ten or twelve inches apart. But few flowers give such satisfactory results for the small amount of labor required to grow them.

NASTURTIUMS—These old garden favorites have been so much improved of late that they are now fully entitled to a place in

the same rank with asters, pansies and sweet peas. The seed can be planted where they are to remain as soon as the soil is dry enough to work in spring. I prefer to plant a few seed for early bloom in small pots in the house. One seed in a pot, planted the last of March or early in April. But few flowers will continue to give such a quantity of bright bloom during the hot dry weather of midsummer as the nasturtium. The seed should be planted one inch deep, and the soil pressed over them firmly to insure good germination. The tall growing sorts should have a trellis for best effect. They also do nicely trailing on the ground, if planted about two feet apart, for trellis, eight to twelve inches. The Tom Thumb or dwarf growing varieties are best for beds or borders. They succeed in any good garden soil, and are as easily grown as a potato. They should be planted twelve to fifteen inches apart. If they are planted too close they are apt to rot off during wet weather.

PANSIES require a cool moist situation for, best results, rather strong clay loam is preferable, but they will succeed on any good garden soil. The large flowered varieties will not stand so well during the hot dry weather of midsummer as the medium sized kinds. Sow seed as early in spring as the soil will permit. These will bloom freely during the latter part of summer and fall. All blooms should be kept cut off as they begin to fade. If they are allowed to seed they soon become exhausted. After blooming for a considerable length of time the plants make long straggling branches, these should be cut off from time to time, which induces new branches to grow from near the base of the plant, and thus prolong its usefulness. By giving the plants a mulch of coarse manure leaves or straw when the ground freezes, they will produce a wonderful profusion of bloom early the following spring.

PETUNIAS—To grow the better kinds of

these old favorite flowers it is best to sow the seeds during April in shallow boxes in the house. The seed is so small that it must not be covered more than one eighth of an inch for best results. Transplant as soon as the young plants are large enough, to small pots or flats. When planted where they are to remain they should be at least two feet apart each way. It is better, however, to plant more thickly, and when the plants come into bloom weed out the poorest plants. There is always some poor kinds will come from the seed of the very best strains we can get.

PHLOX DRUMMONDII—Sow the seed as early in spring as the soil can be worked, not more than one quarter of an inch deep, when the young plants are about two inches high transplant where they are to remain, setting them ten to twelve inches apart.

SWEET PEAS—Sow as early as the soil can be worked in trenches four inches deep and two or three inches apart. Cover two inches deep, working in the balance of the soil gradually as the plants grow. When they are four or five inches high they should have a trellis of poultry netting, brush or twine. To get the best results they require a well drained rich clay loam and thorough

cultivation until they are a foot in height, then mulch with coarse manure or straw.

VERBENAS—Sow seed early in April in boxes, and transplant as soon as they have made three or four leaves to small pots or flats, and, when the trees are starting out in leaf, plant out of doors twelve to eighteen inches apart.


To grow good annuals the soil should be made rich and given thorough cultivation. Water with the rake, in other words cultivate often by stirring the soil frequently with the garden rake. This prevents the soil from drying out. Do not wait for the weeds to grow, but rake over the soil at least two or three times a week in dry weather. It can be done more quickly than watering and gives better results.

In case the soil should become too dry in case of a long drought, water thoroughly at night. The soil should be saturated to the depth of a foot. Next morning, as soon as it can be stirred without cleaving together, use the rake again. If this method is properly followed up you will not require to water very often, even during a dry summer, and you will get splendid results.

W. W. HILBORN.

Leamington, Ont.

AN EXQUISITE SHRUB.

 **OF THE** Spireas there are many ; some are shrubby, some herbaceous, some bloom early and some later. Their blossoms vary in color and form. Their foliage is commonly interesting.

The *Spirea Thunbergii* is not much known. It is a dwarfish elegant grower. Its beautiful light green foliage comes very early, and is almost linear. This narrow foliage upon its fine slender branches is a very suitable and elegant addition to a bouquet the season through.

As autumn approaches the leaves assume many golden scarlet and bronze colors, and there remain for weeks and weeks exquisitely beautiful. Many trees and shrubs take on beautiful colors for a few days, then we see bare poles. The very early scattered white flowers of the *Thunbergii* are very nice but are not remarkable.

The coming flower lovers will plant a clump of *Spirea Thunbergii* in their beds of shrubs or flowers.

Niagara Falls South.

E. MORDEN.



FIG. 1810. WINDOW GARDEN.

TIMELY TOPICS FOR THE AMATEUR—III.

THE month of May is often spoken of as the "merry month of May," doubtless deriving this pleasing appellation from the fact that "May" blossoms and bright spring weather usually make their more than welcome appearance during this, the first real spring month of the year—compelling us by their brightness to forget the customary vicissitudes of April weather, and the long months

of winter, past and gone. The routine of garden work in May and early June depends perhaps more on the prevailing temperature than during any month of the year, at least so far as tender plants are concerned; as the trying ordeal now takes place of transferring most of these plants from their winter quarters to the vagaries of spring weather out of doors. Care must be exercised in exposing plants of tender growth too ab-

ruptly to outdoor life. Stand the plants outside for a week or two if possible, to harden, before planting them out in the ground, and don't hurry the plants out of the greenhouse unless the weather is favorable, especially coleus and tender plants. Weather conditions, and not the calendar, must govern these and similar operations in the garden at all times, for often

"Undue haste brings woeful waste."

THE GREENHOUSE—Shading must be put on much heavier now than before for palms, ferns and similar plants. Palms, cordylines, etc., succeed best stood out of doors on the north side of a building during the hot summer months; stand on a piece of slate or shingle, this will prevent worms getting into the pot and choking the drainage. This applies to all plants stood outside.

Exotic ferns should be kept in the greenhouse during summer, keep them well watered and the floor well dampened. Tree ferns, especially the Australian varieties, do well stood outside during July and August, but they must have a well shaded, sheltered position, and an occasional spraying.

Top ventilators may perhaps be left open slightly at night if the weather is warm, it will help to harden off the bedding plants. The hardier class of bedding plants, such as geraniums, petunias, verbenas, etc., may be stood outside toward the end of the month, previous to being planted out later on. Coleus and tender plants are safer in the house for a week or so.

Hydrangeas, oleanders, and similar half-hardy plants may be stood outside. Water must be given liberally to all growing plants. Syringe in the afternoon, and close ventilators early, if the weather is cool; early afternoon syringing and closing keeps down red spider. Syringe lightly, heavy syringing damages the bloom, fancy pelargoniums being particularly opposed to syringing; these latter like a cool temperature and



FIG. 1811. CARNATION.

plenty of air, day and night if possible, and plenty of water at the roots.

Gloxinias and tuberous begonias should be well started by now, and when well rooted they will require plenty of water; shade well, but syringe them very seldom, if at all. A moist atmosphere, caused by damping the floors often, is better than syringing. Early morning is the best time for watering plants at this season of the year, late evening watering is not advisable just yet, as chilly nights, with oftentimes no fire heat, induces mildew, damping off and other evils, if late watering is indulged in.

Chrysanthemums in pots that are to be grown outside during summer, may be stood outside now; it may apparently check them some, but less growth is much better than weak, spindled growth, induced by a high temperature. These plants may have their final potting as early as possible into the pots they are to flower in; use a rich loam and pot firmly; if bushy plants are required pinch the tips of the shoots off every week or two until July.

Carnations may be planted outside in the borders early in June, or even earlier than that, if fall and winter flower is required;



FIG. 1812. PRIMULA OBCONICA.

pinch the tips of the long growth off, continue this pinching until July, you will have more bloom than if they are left to grow as they please.

Cuttings of young growth of *Aloysia citrodora* (lemon verbena) will strike readily if inserted in sand.

Shade fuchsias, and syringe them frequently; fuchsias succeed best stood outside in summer, on the north side of a fence or building.

Pot off seedling primulas and cyclamens singly in small pots; if the plants are very small and crowded, transplant them into shallow boxes or pans until high enough for potting; shade and give them plenty of air, especially the cyclamens.

Primula obconica makes a nice greenhouse plant.

Fancy caladiums should be started in sand, if they are not already under way; when roots and growth are about an inch in length, put them into well drained pots large enough for them to grow in all summer; put the bulb just under the surface of the soil, they require a light compost, equal parts loam, leaf soil and sand will suit them; water sparingly until well rooted, then water liberally. Keep them in the greenhouse all summer, they like heat, shade, and a

moist atmosphere. These caladiums are very beautiful plants when well grown.

Secure a plant or some cuttings of *Plumbago capensis*, its pretty lavender blue flowers, and its easy culture, make it one of our most desirable greenhouse plants; it will stand outside in a shaded position during summer.

The new begonia, *Haageana*, promises to be a useful addition to this beautiful class of plants.

Azaleas, Eupatoriums, and all hard wooded plants may be stood outside in June in partially shaded positions.

Genistas do better planted out in the open border.

Divide old plants of violets, and pot divisions into 4 or 5 inch pots, plunge pot and all outside in partial shade, and give plenty of water all summer.

The new violet, "Princess of Wales," is a grand acquisition to these sweetly perfumed favorites. The flower is very large,



FIG. 1813. BEGONIA, HAAGEANA.

has a long stem, is a deep rich blue in color, very fragrant, and a robust grower.

WINDOW PLANTS—If fuchsias commence to drop their leaves, red spider is likely causing the trouble ; syringe the plants often ; if these little pests are very numerous, take the plant, if not too large, turn it upside down and plunge the plant, not the pot, into a tub of clear cool water, hold it there a minute or two, as the red spider dislikes water, and repeat the process every few days if required. A few nice stocky geraniums well established in 4 inch pots may be potted into 6 inch pots, in good rich, loamy soil, plunge pot up to the rim outside in the open border in June ; pinch the tips of the leading shoots out about every two weeks until July, and keep the flower stems closely picked off as soon as they appear until September, then let them flower ; take them in before frost. By this method you will secure bushy plants and lots of flowers in autumn and winter. *Le Pilote*, scarlet ; *Hermine*, white, and *Corinne*, double flowering bronze, are three good varieties. Fragrant geraniums succeed well treated in this way, the lemon scented variety being perhaps the best. The *East Lothian stock* makes a good window plant. A plant of

the perennial *tropeolum*, *Boule de Feu*, will make a grand climber for the window in summer or winter ; give it rich soil, plenty of root room and water. This variety of the *tropeolum*, with its profuse and dazzling scarlet blossoms, makes a grand display in any place suitable for it to grow in. Cactus should be repotted if they require it, but don't overpot them ; equal quantities of

loam and sand, with plenty of drainage, suits these plants best ; water them seldom, especially just after repotting. *Calla lilies* may be planted out in the garden in June in a slightly shaded position. Water all plants thoroughly when required, and on fine warm days.

FLOWER GARDEN—Finish forking up beds and borders and transplanting annuals, etc., from frames. Thrip, green fly, and the rose worm or grub, will soon commence their attacks on out-door roses, the two former can be kept down by an early application of tobacco water sprinkled on the plants, or spread some tobacco stems under the plants ; if this is commenced early enough you can keep these pests in check. Hellebore powder, or a weak solution of Paris green water, applied once or twice about the time the first buds appear, will destroy the rose grub. Dutch and other bulbs that are out of flower may be taken from the beds, lay them in flat



FIG. 1815. SPIKE OF EAST
LOTHIAN STOCK.



FIG. 1814. TULIP.

shallow boxes mixed with a little soil, leave them out under a fence or trees until fall; look them over occasionally, as the wood lice are very partial to them, especially hyacinths. Commence bedding out geraniums and the hardiest of the plants about the end of the month, leave coleus, caladiums, and cannas a little longer. A bed of tea roses gives good results, especially on light soil; plant in June, get large plants if you can. Etoile de Lyon, Marion Dinglee, and the profuse blooming dwarf Clothilde Soupert, for an edging, makes a good selection; if another variety and color is wanted, the little pink Hermosa will give grand results. Give water to beds early in the day at this season of the year.

FRUIT GARDEN—All planting except perhaps strawberries should be finished before this time. Keep the hoe and cultivator busy. Watch out for caterpillars on gooseberry bushes; dry Hellebore sprinkled lightly on the leaves early in the morning will destroy these voracious creatures. A weak solution of Paris green water is efficacious, this should not be applied after the currants are of any size. I find Bordeaux mixture

sticks to the fruit, and spoils the appearance of gooseberries and currants. Spray plum, pear and apple trees after the bloom has fallen with Bordeaux mixture.

VEGETABLE GARDEN—Onions transplanted from hot beds, and all growing crops, will require a light surface stirring of the soil; one hour's work now with the scuffle or Dutch hoe will save many times over the labor if left until later. The main crop of carrots and beets may be sown. The main crop of potatoes should be planted about the end of May. Plant second early cabbage—Henderson's Summer is a good variety for second early. Sow seeds of savoy and late cabbage and cauliflower early in May in the open ground. A late sowing of peas and beans may perhaps give you good results if the weather is favorable. Plant out leeks as soon as large enough, in shallow trenches prepared the same as for celery. Transplant small celery plants from seed beds or boxes into cold frames; shade and water them well.

Hamilton.

HORTUS.

NOTE.—It will be necessary to make some allowance for dates given, as this article is written for southern Ontario

EVERGREENS.

EVERGREENS are used for hedges, wind-breaks and for lawn purposes. Very few farms can be found which do not need wind-breaks, especially in winter. Those who do not feel able to plant rows to protect their fields should at least arrange to shelter their buildings. Hedges may be made to answer as fences and low wind-breaks. They are beautiful as well as useful. Norway spruce is largely used for wind-breaks and hedges; it is cheap and hardy. Arbor Vitae or white cedar is especially suitable for hedges; the

roots are fibrous and bear transplanting very well. Norway spruce and other evergreens can be handled with more ease and safety when small. This is true of trees and shrubs generally, but it will take years of patient teaching to get planters to generally act upon this idea.

Scotch pine grows with great rapidity and soon makes a wind-break or a large single specimen. Austrian pine is smaller; both have coarse strong needles as foliage. White spruce is a rapid grower and should be more used. Black Hills spruce is a slower grow-

er, forms a compact head, has a fine dark foliage, and will be largely planted wherever it is known. Colorado blue spruce is similar in growth, and its average colors are much finer than Norway spruce. Occasional samples possess what we call a very bright blue tint and are sold at higher prices.

The young growth of Douglas spruce is very pretty, and when established the trees are rampant growers. Concolor spruce is unique in appearance, its foliage looks strong but has a soft feel.

Colorado Blue, Concolor and Douglas spruces are hardy rocky mountain evergreens that have a bright future. Until recently they were high priced. At present they are quite within the reach of any one who has room for a few hardy novel and beautiful evergreens. A short wind-break of Douglas spruce should be a rapid growing novelty in most neighborhoods. The half hardy and rare evergreens are not noticed here.

For lawn purposes the sharp pyramidal

growth of the Irish and Swedish Juniper marks them as very ornamental. The Irish Juniper has a blue green tint in summer but turns brownish in winter. The Swedish Juniper has a peculiar light pea green tint which does not disappear in winter. When the rare beauty of this Juniper becomes known few persons who have room will be without it. The dwarf mountain pine forms a low spreading lawn tree; its foliage is dense, short and pretty.

All of the evergreens mentioned are hardy here. Some of them are somewhat scorched upon their windward sides during cold winters.

Shrubs and evergreens in the lawn as well as the cattle at the barns and the people in the houses will come through in better shape if wind-breaks are provided. Evergreens should be cultivated for a few years,—after that, if the limbs are all allowed to remain, they will commonly care for themselves.

Niagara Falls South.

E. MORDEN.

A CARNATION BED.

"Take the fond heart from its home and its hearth,
It will sing of the loved to the ends of the earth."



VERY poor old lady, living in an out-of-the-way corner of the world, all by herself, not long since was found tending her carnations for companionship and memorial of happier days in the far off fader-land. The cottage was old and dilapidated, but her bed of carnations was a rare sight. An old lady, bent and shrunk with age, hobbled to the gate near where these lovely flowers of every shade were joyously blooming.

"Yo lofes de pinks, ma'am?" she asked. "I never saw such beauties before," was my honest answer. "I lofes you for sayin' so, gute lady. De pinks are all old Gritchen hafe to make her happy now. She bese all alone, an' works out all de sor'ow of her

heart in de bed of lofly pinks. I gets hoon-gry to see them in winter. I puts straw an' carpet heavy to keep the roots warm troo de deep snow. In the spring dey be green and blooming soon, and make my heart glad until frost come again. Dey mind me of de fader-land, when old Gritchen was young, and gather the sweet carnation an' clove pink to fold in a clean handkerchief to carry to church with Wilhelm; now he be dead, and de gute frein of de fader-land say dey keep carnation on his grave. But in dis strange land nobody will put dem on Gritchen's grave." She gathered me a fine bunch, and I was loath to leave the poor old creature in her lonely exile. But I rejoiced that the sweet flower was filling its mission, in a sad and desolate heart. Let us do likewise if sad.

M. A. H.

THE DAHLIA.



FIG. 1816. MR. JOHN WILSON AMONG HIS DAHLIAS, NAPANEE.

Mr. John Wilson read an interesting paper before the Napanee society on this subject, showing how he had so successfully grown this flower. Mrs. Judge Wilkinson, the president, encloses a photo, showing Mr. Wilson among his favorites, and the following note :

The best bloom of the above photo was in September when one stalk, which grew to six feet, produced at one time fifty-three blossoms and buds ; another, the Queen, grew seven and a half feet high

and had blossoms five inches across. Mr. Wilson attributes this great success to good drainage, rich soil and plenty of water, and the following is his method of growing : He starts the roots as soon as possible after middle of March, in earth in a warm place, leaving from three to five bulbs attached ; when the ground is warm and danger of frost over he digs a trench eighteen inches deep, fills up ten inches with coal ashes, which prevents water accumulating about the roots, then puts over eight inches of soil, measures the trench off and puts in firm stakes three feet apart ; he makes a hole with a spade and puts in layers of well rotted manure, earth and wood ashes, about three handfuls of the latter to a hole and they must not come in contact with the bulbs, puts in started bulbs so that the highest bulb will be covered about an inch ; too deep planting, the ground is too cold ; lets all shoots grow until they are about five inches high, then removes all but the best one and ties it to the stake, when it will branch out like a sunflower. The trench need not be made, just the holes, but the drainage will not be so perfect.

PRIMULA OBCONICA. —I think that if I could have but one plant for the house it would be *Primula obconica*. It seems to have all the virtues, and I do not know of an objection. It is neat in habit of growth, the foliage is a rich dark green, and no insect foes attack it, so far as my experience goes. The flowers are peculiarly dainty, a little smaller than the Chinese primrose, about the size of a Phlox blossom, with notch in the centre of each petal. They are borne crown-like on slender stems, a dozen or more in a cluster, about four or five inches

above the leaves. The color is an exquisite pale lavender, changing to white, and the flowers have a delicate perfume. I have a plant which has been in blossom for nearly a year, sometimes having a half dozen flower stalks in bloom at once. It is valuable for cutting, as the flowers last a long time and the buds continue to open ; the long stems make it capable of use for decoration in many ways. It likes a rich soil made light with sand, and good drainage. Give it a moderate amount of water and not too much sunshine.—*Vick's Magazine*.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrears must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE photographs illustrating our article regarding Mr. Thos. Beall and his home, were made by Mr. Herbert Beall, his grandson.

NOVA SCOTIA AND NEW BRUNSWICK are to unite in founding a first-class Agricultural College.

MISS ELEANOR A. ORMEROD, the celebrated English Entomologist, whose reports have been so highly appreciated by the public, both in Europe and America, has been given the degree of L. L. D. by Edinburgh University.

A GOOD WINTER RUSSIAN APPLE.—Mrs. Dr. Hoskins sends a sample from a scion top grafted in the doctor's orchard. It has the appearance of being a valuable winter Russian, being above average size and of a beautiful color.

MR. BACON, of Orillia, who was sent out by our association to lecture before quite a number of our societies, writes: "The societies are broadening out beyond individual

benefit in their connection with your association. Nearly every society which I have visited has made a decided advance."

WHALE OIL SOAP has been quite effectually tried in Illinois for the destruction of San Jose scale. It is estimated that 99 per cent. of the San Jose scale in one orchard in which a large number of trees were sprayed was killed by two successive sprayings with whale-oil soap in the fall of 1896 and in the spring of 1897.

IMPORTATION OF NURSERY STOCK.—A bill has been recently passed by the Minister of Agriculture for the Dominion providing for the importation of nursery stock in the month of April, under the restriction of its being fumigated properly at the port of entry. Fumigation houses are immediately to be provided for this purpose.

COLD STORAGE.—The Hon. F. R. Latchford, Minister of Public Works, gave a very

instructive talk on cold storage houses of small cost for the fruit grower, at Grimsby, on Friday, April 6th. A large number of fruit growers were present and all felt convinced that Mr. Latchford thoroughly understood the underlying principles of cold storage.

GILLET'S LYE advertised in these pages is especially commended for use in spraying trees to clean them of fungi and insects. The proportion advised is one package to five gallons of water, but how much a package weighs we are not told. If an article like this would answer the purpose of whale oil soap, which is made of caustic potash and fish oil, it would be more convenient to apply, but this is a question. Probably it would be useful in clearing the cherry trees of the aphid at any rate, and perhaps be a good preparation for routing the oyster shell bark louse.

THE ONTARIO FRUIT GROWERS' ASSOCIATION is sending Mr. Wm. M. Orr, President, a delegate to Ottawa to interview the Minister of Agriculture regarding affording the fruit growers of the province generally better facilities for transporting their pears, peaches and early apples to Great Britain in cold storage. The difficulty is to get proper temperature guaranteed, and until this is afforded none of us can ship with confidence. Another object is to unite with other Associations in asking that the Toronto Industrial Fair be made a Dominion Exhibition in 1901, thus attracting large numbers of the visitors to the Pan American.

JOHN RUSKIN. — Who, among us, that has read *Sesame and Lilies* but has felt a friend's departure in the news of the death of John Ruskin. The Garden thus makes the announcement :

John Ruskin, poet, teacher, reformer and philosopher died at his charming home, Brantwood, Coniston, on Saturday last, in the eighty-first



FIG. 1817. THE LATE JOHN RUSKIN.

year of his age. Ruskin strived to reach the high ideals preached in his noble moral essays—earnest messages to the world and master-pieces of English prose. His famous works "*Modern Painters*," "*Stones of Venice*," "*Seven Lamps of Architecture*," "*Fors Clavigera*," "*Unto this Last*," and "*Sesame and Lilies*" are amongst the greatest contributions to the literature of this century. On Thursday, in the churchyard of Coniston, Ruskin was laid to rest, in the beautiful country he loved so well. It was his wish, that if his death occurred in London, to be buried with his father and mother in the churchyard of Shirley, near Croydon, the village of which the Rev. W. Wilks is vicar.

Leaving to others to do justice if they can to Ruskin's genius and its ennobling influence on horticulture as a fine art will you permit me under a deep sense of his sudden loss, to cull a sentence or two from the appreciative notice from the *Scotsman* of Monday on Ruskin's influence on art:—"In his day Ruskin did more for British art than any other man had done. When his first book appeared, British art and taste were fast bound in the traditions of a poor and vulgar conventionalism. It was in much the same condition as poetry had fallen into at an earlier date, and from which it was raised by Coleridge, Scott, and the other great poets of the romantic revival.

"Ruskin led the revival into the realm of art. He woke the nation into a new and finer sense, and a sense of the true and beautiful in form and color. He shook the national taste out of its bondage, purged it of vulgarity, and taught it to see and appreciate the beautiful. The revolution

of taste that has taken place in the last fifty years has not been wholly his work, but he began it, and even those who now refuse to acknowledge him a master, are the fruits of the stimulus which he gave to the love of art and the sense of beauty.

"The great distinction of all Ruskin's writings is their sincerity, or may be called originality. He drew inspiration from men and books, but he gave us no second-hand work. He describes for us what he has seen with his own eyes—never through the eyes of another."

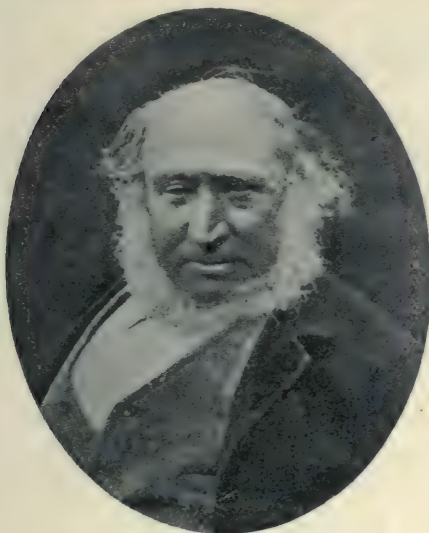


FIG. 1818. R. D. BLACKMORE.

R. D. BLACKMORE.—The Garden also fittingly announces the death of this writer, so popular with us in Canada, that we take the privilege of the extract, of course giving due credit :

This writer of delightful romances—a writer who has told us of the beautiful Devonshire scenery and its flowers in his tale of "Lorna Doone"—passed away on Saturday last at his Teddington home. The English-speaking world is poorer for the loss of this gifted and interesting man, who hid himself from the world and its gaiety in his garden at Teddington, where he cultivated fruits enthusiastically for many years. Pear culture was his favorite hobby, and his assistance for many years as a member (then as chairman) of the fruit committee of the Royal Horticultural Society was of importance. We remember with pleasure Mr. Blackmore's paper upon Vine pests delivered some years ago at a conference, under the auspices of the Royal Horticultural Society, a paper of practical value, brimful of humor and revealing a deep knowledge of the subject. Lovers of gardens, of scenery, and of healthy literature should read Mr. Blackmore's novels, "Lorna Doone," "Cradock Nowell," and

"Perlycross" being among his most interesting productions. Mr. Blackmore was born at Longworth, in Berks, about seventy-five years ago, was educated at Blundell's School Tiverton, and from thence passed to Oxford and to the Bar. "Lorna Doone" shared the fate of many novels as brilliant; it failed to find a publisher until long after it had been written. It is said that eighteen publishers rejected the work, and when it appeared it received scant attention from reviewer and public. Mr. Blackmore attributed the ultimate success of his best known work to the fact that the marriage of Princess Louise to the Marquis of Lorne gave rise to the supposition that the novel was in some way connected with the "Lorne" family. Editions quickly appeared. The public were satisfied, too. If Lorne had nothing in common with Lorna, they agreed the writer had given to the world a brilliant romance. About ten years after its first publication Messrs. Sampson, Low, Marston and Co. issued the 22nd edition. It is not too much to say that Lynton and Minehead were made famous by this novel of the land of the Doones. Mr. Blackmore was a thorough lover of the open air, and besides a keen gardener was a good shot and trout fisherman. Of late years we have missed his familiar face at the meetings of the Royal Horticultural Society, due not to a lessened interest in flowers and fruit, but to failing health.

Mr. Blackmore, we believe, was not offended when described as a "market gardener," and used this *nom de plume* to one of his works. He was an enthusiast, and his produce from the many acres cultivated at Teddington found its way to Covent Garden, but he confessed once to the writer that Pear culture was not all profit.

The Chronicle (England) says :

R. D. BLACKMORE was a good cultivator and a practical man ; we have seen him pruning his own vines and fruit-trees. When fruit-growers were being lectured upon the necessity of selecting the best fruits only, of taking great pains with packing and other details of marketing, Blackmore once drew us aside with a curious smile to show us that what was being recommended was just what he had been doing for years. In these particulars he was like Thomas Rivers, who, however, was not so lenient to those who were presumptuous enough to think they could teach him how to grow fruit-trees. There is one trait in our friend's character that has not been alluded to, though the reader has but to look at his genial portrait to see that a keen sense of humor was one of his most prominent characteristics. Those who were present at a certain conference on vine diseases held at Chiswick some years ago, will remember the rich, rollicking humor with which he described a certain disease whose nature at that time was unknown. The way in which he criticised the plant doctors with an imperturbable countenance, was one of the richest bits of fun we ever remember. Unfortunately the critic was no better but rather worse informed, but everyone enjoyed the fun nevertheless. Another characteristic of our lamented friend was his generosity. Several instances of

this came under our notice. He could not say "No" when pain, or poverty, or distress appealed to him. It is possible his want of success as a business man may in a measure be attributed to this. Twice within our recollection the wagons in his yard were loaded and about to start for market, when a poor, broken-hearted man, whose

wife was dying of consumption, came and pleaded for some strawberries, which were then at a high price. The man went off with the strawberries, telling the writer of these lines that he felt ashamed to ask such a favour from Mr. Blackmore, as he had so often received similar kindnesses.

QUESTION DRAWER.

Best Fertilizers for Orchard.

1147. SIR,—Have been using barnyard manure for years on my orchard, but supply cannot readily be got now, so will have to get something to take its place. Saw sometime ago, in the *Globe* I think, an advertisement of Bradley's Fertilizers, and took a memo at the time. The kinds specified were Niagara phosphate, guano, dissolved bone with potash, and fruit and vine fertilizer. Could you give me a practical opinion as to whether these articles are *reliable*, and also if so, which kind would answer best for pears and apples on clay soil. As you well know it is of the utmost importance to us fruit growers that orchards should be fed well, and I do not wish to spend money on an article that will not give the best results. If these goods are not the best, kindly let me know where and what to get.

Owen Sound.

W. B. STEPHENS.

As far as I am aware, the Bradley Fertilizers are reliable; that is, the results of their analysis, as made by the Government chemist, agree very well with the percentages of phosphoric acid, potash, and nitrogen guaranteed by the manufacturer.

The composition of the brands mentioned by your correspondent is as follows:

	Nitrogen, Calculated as Ammonia.	Phos. Acid.	Pot- ash.
1. Niagara phosphate	1.00	8.00	1.08
2. Seafoal guano	2.50	10.00	1.50
3. Dissolved bone with pot- ash	1.00	10.00	2.15
4. Fruit and vine fertilizer	2.5	10.00	5.40

For orchard application, I should expect the best results from either Nos. 3 or 4; the price per ton would naturally be a factor in deciding which brand would be the more profitable to employ.

Since this orchard is not receiving barnyard manure, and the soil is a clay, it occurs to me that the turning under of a crop

of clover might be beneficial. If sown early in July, an excellent stand will be obtained, if the season is at all favorable, by the end of the season—say, October—when it may be ploughed under, or, if thought best, left as a cover crop during the winter and turned under early in the spring. This plan is a very economical and effective one for enriching the soil in nitrogen and humus. It is doubtful, if such a method were pursued, whether it would be necessary to purchase nitrogen in the form of a commercial fertilizer.

FRANK T. SHUTT.

Chemist, C. E. F., Ottawa.

P. S.—Those proposing purchasing commercial fertilizers should peruse the Bulletin issued by the Inland Revenue Department, Ottawa, which states the composition of all fertilizers sold in Canada.

Raspberry Cane Borer.

1148. SIR,—For a couple of summers a pest has been destroying great numbers of my black raspberry canes, completely killing out some hills. When the young cane is about six inches or a foot in height, some insect deposits an egg in the tender part of the cane. The egg becomes a little white maggot, which eats its way downward about an inch and a half, then eats around the cane, inside the shell, and finally nestles itself there. Thereupon the part of the cane above the maggot wilts and droops over. If the cane be broken off just at the bottom of the wilted part, the maggot will be found.

Please name and describe the parent insect in your next number of the Canadian Horticulturist, and tell us the best way to prevent its ravages.

Hespeler.

H. J. BROWNLEE.

The insect which deposits the egg referred to is the Raspberry Cane Borer (*Oberea bi maculata*). The perfect insect is a long horned beetle which flies during the month of June, and in oviposition the female girdles the cane both above and below the place, and the part of the stem above soon droops and withers. The young larva burrows down the centre of the stem, and in the autumn changes into pupa form, remaining in the stem during the winter and escaping the following June. It is not usually sufficiently numerous to effect much mischief, and should be easily kept in check by cutting off and burning all infested canes.



FIG. 1819. BANANA.

The Banana

1149. Give me what information you can about growing the Banana plant.
Orangeville.

SUBSCRIBER.

There are several varieties of the Musa or Banana family. The varieties that are probably best known to horticulturists for greenhouse culture are *Musa Cavendishii*, of Chinese origin, and *Musa ensete* from Abyssinia; the latter variety grows readily from seed and makes a nice decorative plant. All of the Musa family require a greenhouse to grow them successfully; they like a rich,

light soil, plenty of heat and moisture in summer, and plenty of root room to grow in. In winter they require much less water, but the temperature should never be lower than 55 degrees, even at night, to be successful with them.

Musa Cavendishii fruits readily when three or four years old when grown under favorable conditions. It is generally propagated from offsets or suckers that grow up around the old stem, these suckers can be taken off when repotting, and grown on in pots for a year or more, when in spring they can be put into a large tub two feet or more in diameter, and proportionately deep, and if grown in rich soil and given plenty of heat, shade and moisture in summer, with less heat and water in winter, will probably fruit in two or three years. Shortly after fruiting the old stem dies down, so it is necessary to secure young plants as before described. A good specimen will grow from six to eight feet in height, and when well grown has a beautiful tropical appearance.

The Musa are not desirable plants for lawn decoration in summer, unless they can be given a well sheltered and shaded position, as the foliage is light in texture and liable to be torn and broken by storms. The *Musa ensete* is probably the best variety to stand outside in summer for decorative purposes.

Hamilton.

W. HUNT.

Areca Lutescens.

1150. SIR,—I should be glad if you could tell me in an early number what is the reason that a palm does not open its leaves and sends up a plain straight spike. I have a number of palms which are all right, but I have one "*Areca Lutescens*" which has acquired this habit.

JOHN A. ROBERTSON.

Chateauquay Basin, Que.

The habit of the palm, *Areca lutescens*, as described in above question, is perfectly natural; in fact there are but comparatively few varieties, common to greenhouse culture, that develop their foliage otherwise than by means of this leaf blade or spike. Among

the few exceptions in this particular are the *Cycas* family of palms—a photo of one of these, *Cycas revoluta*, can be seen in the November number, 1899, of *The Horticulturist*, which shows the difference in habit; the leaves of the *Cycas* developing from the crown of the plant, somewhat similar to the development of the fronds of many species of ferns, notably the Tree Ferns, instead of from the leaf blade as in the case of the *Areca* family of palms.

The *Caryota*, *Seaforthia* or *Ptychosperma* palms, amongst others, develop their leaves by means of a leaf blade that often attains a length of five or six feet before commencing to open, this habit being more noticeable in these larger growing species than in some of the smaller species, and as the plants attain to a greater age this peculiarity is still more noticeable than in younger plants.

The plant mentioned in the question will doubtless develop the side segments of the leaf blade in due time if the plant is healthy; heat and moisture, especially syringing, will greatly assist the development of the leaf, but do not attempt to hurry the process in any other way. I consider the gradual development of the leaves of those mentioned, and similar species of palms, to be one of their most pleasing and attractive features, as the network of brown fibry filament that adheres to and connects the numerous terminal segments of the leaves with each other, until the whole leaf is fully developed, gives the plant a beautiful and unique appearance, and gives pleasure and delight to those who study the wonderful construction and growth of these useful and ornamental plants.

Hamilton.

W. HUNT.

Orchard on Limestone Ridge.

1151. SIR,—We are the owners of a farm lying towards the northern portion of the County of Huron, Ont., through the centre of which runs a limestone gravel ridge, elevation being somewhat above the other parts of the property. On this ridge the soil is shallow, so much so that it would not pay for the cultivation of other crops upon it. This part of the farm is grown over with a thick

coat of wire or June grass. We are just now considering the question of planting ten acres of this ridge to winter apples. We have been advised to summer fallow this the first season, then the following spring plant trees forty feet apart each way, and cultivate by ploughing under pease or some green crop for a season or two. The trees to be of the *Talman Sweet* variety, and when two or three years old, graft on three or four of the best winter fruit varieties. Your opinion would be regarded as valuable as to the soil mentioned: cultivation, planting, grafting and staking; also the names of three or four of the best winter varieties of apples adapted to this section, or any suggestion from you would be appreciated by us.

"AMATEUR."

We have no experience in planting apple trees on a limestone ridge, in shallow soil, but would fear two difficulties: First, that the trees would suffer from drouth and become stunted, and second, that the soil would lack fertility. If, however, these two difficulties can be overcome, possible success might result. The advice given our correspondent regarding treatment of the soil is good, and the *Talman Sweet* is a first-class stock for top grafting. In planting we would advise drawing as much good soil, with as large a proportion of humus as possible, and use it to fill in about the trees; cultivate thoroughly every year, either adding manure, or ploughing in clover or some such crop, and thus the best conditions will be afforded.

Some good winter varieties of apples are Ontario, Wealthy, York Imperial, Ben Davis, Pewaukee and Canada Red.

Best Single Geraniums.

1152. SIR,—Will you be kind enough to give me the names of the six (6) best single geraniums for bedding out. I refer to those having the largest stems and trusses. You can send the answer through the *Horticulturist*, if you wish.

C. HIRSCHMILLER.

23 Simcoe W., Hamilton, Ont.

We have been testing over 260 varieties of geraniums at the College, and where there are so many excellent varieties to choose from, it is difficult to narrow the list down to half a dozen. Among the scarlet varieties there is a great range for choice, while among the whites the really first class

varieties are comparatively few. I give below two lists of which includes quite a range of colors. Those in the first are single and many of them are new. Those in the second are double or semi-double, and most of them are well known standards that have not yet been surpassed :

- 1.—M. A. Boulaus, rich crimson-scarlet.
W. A. Chalfant, bright scarlet.
Mrs. A. Blanc, salmon.

Mrs. E. G. Hill, salmon-pink.
Madonna, delicate soft pink.
Snowdrop, dwarf, pure white.

- 2.—J. J. Harrison, bright scarlet.
Gen. Grant, orange scarlet.
S. A. Nutt, dark crimson.
Adrien Corret, magenta crimson.
Mons. de la Rue, pink.
La Favorite, pure white.

Open Letters.

Fruit in New York Market.

SIR,—Late in December I purchased three California Winter Nelis pears, that weighed a little more than 2½ lbs., for thirty cents. On the same fruit stand there were more than forty pears of the same variety equally large and fine. The quality was best, and they were free from defects. I never supposed Winter Nelis could be grown so large. In January I secured two Easter Beurre pears that weighed one full pound each for thirty cents, and the dealer had many more equally fine and large. I have eaten smaller pears of the same variety, of better quality. Nevertheless, they were delicious. I found some prime specimens of P. Barry to-day at 10 and 12½ cents each. For the latter half of this month, and March and April, the P. Barry pears and unsurpassed. They reach here carefully packed in prime condition, as hard as stones, and go into cold storage until the market is ready for them. Prime strawberries from the South to-day bring 40 cents per basket. They are large pints or small quarts. They are in *perfect condition*. Beautiful and perfect heads of Cauliflower, 12 to 15 inches in diameter, are in market. When Cuban prosperity is restored, we shall have fresh vegetables and fruits from that island in January and February, and from Bermuda in March and April, and from our Southern States in May and June. Freights by steam vessels from Cuba will be low, and with cold storage such products can reach us in fine condition, and sell at moderate prices. Late strawberries, raspberries, blackcaps, blackberries and currants will command better prices than early fruits grown in this section. We have had a fair supply of handsome apples, but few of fine brisk subacid flavor, such as can be grown in Ontario. I have purchased fine large and fair Greenings, Spitzenburgs, Bell-flowers and Golden Russets, and then thrown them into the gutter after tasting them they were so insipid.

Brooklyn.

FRANCIS WAYLAND GLEN.

Dishonest Packing.

SIR,—We see by Canadian Grocer that you and Mr. Orr called on the Minister of Agriculture to endeavor to find some means to put a stop to dishonest packing of fruit, especially of apples for exportation. Our canning factory here has had a great amount of trouble this year when opening a barrel that was bought as Spys or Baldwins to find them sweet apples or poor little cider apples, of no use whatever, and all other fruits to a certain extent are not properly graded and labeled.

We are of opinion, as we wrote you in December last, that the only way to stop this rascality is by Act of Parliament, making it compulsory when fruit is sold that it be properly labeled with the growers' name, number of lot, township and county; in case he did not pack it himself, the man's name who did pack it; in case he sold to a dealer, then the dealer's name. The grower or dealer to become personally liable for damages, and every one connected with the packing to be criminally liable for committing a fraud and be punished by fine or imprisonment or both.

We have never seen the rules for grading as made by your Fruit Growers' Association. Would like very much to have them.

We will be ready to assist all we can at any time to further the purpose about which we are writing

Waterford.

BOWLBY BROS.

A New and Valuable Forage Plant.

Capt. E. A. Wilson in January Horticulturist recommends a Desmodium or Beggar Weed. Would Capt. Wilson kindly give the specific name, as there are about eighteen species of Desmodium in the United States and about nine in this province? I have found seven species growing within a mile of my home, in light, sandy soil. Desmodium Candense or Tick Trefoil is the most likely species as a forage plant; it grows about from four to six feet high. I have noticed

cattle eat this species quite readily, belonging to Leguminosæ, belonging to a large, useful class of plants. Clover, vetch and peas are included in this family. If you carelessly run up against a plant in seed enough of seed pods will adhere to your clothing to sow a good sized garden. This species is quite a good garden herbaceous plant. The flowers are purple and much larger than any other species.

The roots are very wiry; I should think it would be very difficult to plow under if well established. I have grown this plant for quite a number of years. What attraction this plant had for visitors I cannot tell, but they were sure to find it out to their sorrow. A. GILCHRIST.

The Plant Distribution.

SIR,—I am much pleased that the plant distribution is still continued as we consider the plants received worth half the price of the Horticulturist, and would sooner pay something extra than have them discontinued. The raspberry of 1897 distribution was so laden with berries last year that the branches hung to the ground with the weight of them. The Crimson Rambler of the year following had one cluster of eleven roses last summer, each rose perfect, and the first in bloom remained until the last bud opened two weeks later.

Toronto.

MRS. T. P. IVENS.

Fraud in Fruit.

SIR,—I have just been reading the report of the Annual Meeting, and I think the Association deserves small credit for leaving the Fraud in Fruit question at fairs in such an unfinished state. To me it seems that a fair is more for the encouraging of fruit growing and the educating of the growers than to display to the public what can be grown, though this is a great object, so that the encouraging or allowing of this professional exhibitor is a fraud and an injustice to the grower. Now, I think the only way to knock out this gentleman is for the district branches to take his place. It is their duty to gather up all the best produce in the dis-

trict and exhibit at the provincial fair, so that district may compete against district and province against province. In this way we would learn which district or province could produce the best of any kind of fruit, and what variety of that kind was most suitable. All care should be taken to give the exhibitors confidence of justice, for the best class of exhibitor does not complain, only he does not compete again.

Vernon, B.C.

THISTLE BURR.

Dishonest Packing.

SIR,—I must confess to a great degree of disappointment that your amending reading of Sec. 3 of the Government fruit inspection regulations proposed by the Whitby growers in session assembled should so easily satisfy you.

Although a little better than the original draft, perhaps, it will, in my humble opinion, utterly fail to remedy this crying evil.

If, as claimed in my published article in your March number, "an ounce of prevention" for the obvious reasons pointed out is worth *far more* than a "pound of cure," how much can the "mouse," which, after much labor the "mountain" of Whitby growers has brought forth, be expected to accomplish?

Everybody in this "Empire days" of which we are all so justly proud is expected to display a flag; would it not also be a fitting time for loyal orchardists to raise a war standard of their own? May I offer a design? If so, here it is for consideration while waiting for a better one: A spray of apple blossoms in each corner, a fine cluster of apples in the centre, and surrounding the latter in a large upper half circle this motto: "CONFISCATION AND PUBLICATION FOR DISHONEST PACKERS."

That the principle upon which this sentiment depends will eventually animate the large majority of the apple growers of the Dominion in their legitimate and proper demand for efficient Government inspection is my firm belief.

Yours truly,

Danville, P. Q.

GEO. O. GOODHUE.

Our Affiliated Societies.

GODERICH.—At a meeting of this society Mr. W. Warnock read a paper on "Man's duty to discover and improve trees and plants good for food or for ornament.

WOODSTOCK.—Mr. Bacon's lecture was highly appreciated. Too little attention has been given to growing flowers by amateurs about Woodstock, except by the few, as for example Mayor Scarff, and a few others.

ORANGEVILLE.—Notwithstanding counter attractions a good audience was present on Friday evening, the 30th, to hear Mr. Bacon's lecture on

bulbs and bulbous plants. The Orangeville orchestra contributed some splendid musical selections.

HAMILTON.—The Hamilton Horticultural Society is about to distribute several hundreds of potted plants among the children of the public and separate schools. A card with detailed cultural directions will accompany each specimen and premiums (not money) will be awarded for best grown specimens in the fall.

STIRLING.—Mrs. Jas. Boldrick was again elected president at the annual meeting. Her address

at this meeting, and also the address from the 1st vice-president, was printed in full in the *Stirling Argus*. Prof. Macoun's lecture on climbing vines and perennials on Monday evening was very entertaining and instructive. Music was furnished by the *Stirling band*.

KINCARDINE.—The secretary sends us their circular giving the members a choice of ten collections and offering any member any of the other collections at wholesale cost. Children are encouraged by the "Flower League" to join that department, each paying 10 cents and receiving the "Flower League" premium collection. Cut flowers and plants grown from this collection will form one of the most interesting parts of the Annual Horticultural Exhibition.

NAPANEE.—The town hall was filled to the doors to hear Prof. Macoun, of the Central Experimental Farm, Ottawa, give an address on horticulture. Mr. T. M. Henry, chairman, in his introduction spoke of the benefit the society had been to the town in the way of beautifying the homes and increasing public interest in floriculture in the formation of a public park. There was an interesting musical programme, which was highly appreciated. There was also a question drawer at the close of the lecture.

CARDINAL.—Sir: In re lecture on "Flowers for a Small Garden," by Mr. R. B. White, of Ottawa, held in the town hall here on Tuesday evening, the 30th, it was a very satisfactory lecture on both sides. The audience had many little details explained and questions answered, and the lecturer remarked that it was the best audience he had had yet, and as we are next to last on his list it is pleasant to think that the Cardinal society can more than hold its own against the towns in receiving a lecturer. E. E. GILBERT.

PORT HOPE.—Professor Macoun gave last evening in the town hall a very interesting talk about flowers. He strongly recommended the more general planting of perennials, as in his opinion they gave the best average results. He exhibited dried specimens of those which had proved hardy at the Experimental Farm at Ottawa, which added much to the interest of the meeting. A vote of thanks was moved by J. Smart, Esq., vice-president, and seconded by Judge Benson, which the chairman, H. H. Burham, president, tendered to the professor, hoping we should hear him again on some future occasion.

OWEN SOUND.—On the evening of the 13th March we had our visit from Mr. Wm Bacon, lecturer from the Ontario Fruit Growers' Association. Questions were freely asked and answered. One was: Why the Easter Lilies were so unsatisfactory of late? The lecturer attributed the failure to deterioration of the bulbs. He advised that we cease purchasing for a time until the growers find the importance of growing better stock. In reply to a question about house plants he said it was necessary to have lots of fresh air, good soil, a sharp knife, hard heart and a little patience, and with these success was sure to come. Dr. Cam-

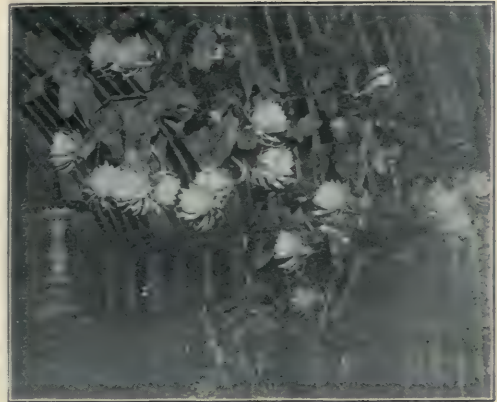


FIG. 1820. CRAB CACTUS, GROWN BY R. JENNINGS, BRAMPTON.

eron, the chairman, emphasized the wonderful effects of flowers in the sickroom, and advised that they be more often sent to houses of the poor in time of sickness.

PARIS.—On Thursday evening, 22nd March, we were greatly favored by a lecture from Mr. Wm. Bacon, of Orillia, on the subject, "The Bulbous Family," presented in a popular manner. The hall was well filled with an enthusiastic and appreciative audience, the more so as our society has included bulbs in its free distribution this year. Mr. Bacon's lecture was one of the best that has ever been given in Paris under the auspices of this society.

Our society is only entering its second year but with increased vigor, not so much in numbers as in enthusiasm, and we look forward to a prosperous year. GORDON J. SMITH, Sec'y.

BRAMPTON.—Mr. Burrell, of St. Catharines, delivered a lecture on "Flowers in the Home" on the 5th March, in Haines hall, and although the night was a very boisterous one, between thirty and forty of our association were present and were deeply interested in the lucid and educational manner in which the lecture was delivered. Dr. French our 1st vice-president, on the violin and Miss Alice Treadgold on the piano gave several selections during the evening. Many questions were asked and answered. A pleasant feature of the evening was the production of two photographic pictures by one of our esteemed members, the manager of the Merchants Bank, W. C. Young. "The Azalea Indica," raised by Mr. Richard Jennings, florist, one of our society; the other is the "Night Blooming Cereus," grown in the conservatory of Mr. W. C. Young. The picture does not show all the flowers out at the time the photo was taken, and about three weeks previously about fourteen blooms were out. If our societies have any photographers in their membership I am sure the general members would be pleased to see cuts of plants, etc., in *The Horticulturist*. I en-



FIG. 1821. AZALEA INDICA, GROWN BY
R. JENNINGS, BRAMPTON.

close photos of the two plants and shall be pleased if you will give them space in your next issue.

HENRY ROBERTS, Sec'y.

TORONTO JUNCTION.—The Verandah and its Environments was the subject of Mr. Bacon's lecture before our society on Wednesday, the 28th March. He advised that a deep layer of good rich soil be placed around the verandah for honeysuckles, crimson ramblers, bitter sweet, jessamine, clematis, etc. Hanging baskets, he thought a necessary adjunct to the verandah, and such plants as the lobelia, the German ivy and other trailing plants, surmounted in the centre by a striking geranium, proved very effective. Instead of bringing plants out of the house and distributing them over the verandah, he suggested that cannas, in groups of half a dozen, should be

placed in large pots to give foliage, color and a tropical tinge. Palms and hydrangeas were also effective. Instead of beds, earthenware or rustic vases were recommended for the lawn on each side of the steps. These, containing vincas, the German ivy, the old Madeira vine, together with bright flowers, took up little room and would not deface the lawn.

MITCHELL.—The first public meeting under the auspices of the Mitchell Horticultural Society was held in the town hall on Friday evening, March 16th. For the first meeting of the kind there was a good attendance, and the audience evinced a keen interest in the proceedings and especially in the practical talk by Mr. Wm. Bacon, of Orillia. The management of the Ontario Association made no mistake in securing Mr. Bacon for this lecture work, for he is doing it well and his audiences are showing their appreciation by the attentive hearing they are giving him and the freedom with which they ply him with questions. The chair was occupied by Vice-President W. Elliot, B. A., the president, Dr. Smith, having been called out. T. H. Race first explained the purposes for which the society was organized, its aim and objects and the benefits to be gained through its privileges and its operations. One thing noticeable about the audience was that all the clergymen of the town were present, and at the close of Mr. Bacon's very practical and instructive address a vote of thanks in appreciative and complimentary language was proposed to him by Rev. M. Kenner, of the Methodist church, heartily seconded by Rev. Mr. Kerrin, of the Anglican church. The hall was nicely decorated with plants in bloom from the greenhouses of Mr. C. E. Skinner, and the object lesson was as pleasing as the talk of Mr. Bacon was instructive. The society has now over sixty members and the number promises to increase during the year. T. H. RACE, Sec.

OUR BOOK TABLE.

ANNUAL REPORT OF THE Fruit Growers' Association of P. E. I., 1900, annual meeting held at Charlottetown, Jan. 24, 1900. Secretary, Peter McCourt, Charlottetown. This is the record of the fourth annual meeting, and though scarcely fifty pages, it is a most creditable report, showing that this association, though young in years, is yet accomplishing work which might do credit to an organization of riper years.

PRIZE LIST of the Great Northwestern Exhibition to be held in Goderich, Sept. 26, 7, 8, 1899.

THE AMATEUR'S PRACTICAL GARDEN BOOK, containing the simplest directions for the growing of the commonest things about the house and garden, by C. E. Hunn and L. H. Bailey. Published by the McMillan Co., New York, 1900. Price, \$2.00.

THE WESTERN NEW YORK HORTICULTURAL SOCIETY—Proceedings of the 45th annual meeting, held at Rochester, N. Y., Jan. 24th and 25th, 1900. John Hall, Rochester, Secretary. This volume is full of practical interest to the most advanced fruit growers of North America, and is well worth the \$1.00 membership fee in return for which it is sent out.

This is a most convenient and useful volume of 250 pages; just what every amateur flower grower needs to have at his elbow for ready reference, to help him out of his difficulties and furnish needed information. It is a sort of Encyclopedia in a nutshell, having the names of plants alphabetically arranged, with brief description, treatment, etc. We commend this book to those who do not wish to invest in a larger or more expensive work.



FIG. 1822. EARLY VICTOR.

THE CANADIAN HORTICULTURIST

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THE EARLY VICTOR GRAPE.

OF the one hundred and fifty varieties of grapes in our collection, there is no black grape which seems more worthy of notice than the Early Victor. After trying for years to satisfy himself that it was right to hoax the buyer with Champion, which has so nearly ruined the market for early black grapes, it is a real comfort to the fruit grower to find a grape that is about as early in ripening, and, at the same time, of really good quality.

We notice that it colors very early, fully two weeks ahead of Concord, and is fit to gather about ten days before, along with Hartford and Moore's Early. Watts, of the Tennessee Experiment Station, says of it, "A superior early black grape, valuable in the home collection. Moore's Early is more profitable for market." Campbell, of Ohio, said of it, "I know of no black grape so well fitted to take the place of all foxy abominations (Champion, Ives, Hartford, Janesville) which have been tolerated on account of their earliness.

"I am glad to recognize in this variety a really good, very early black grape, with a vine evidently of the healthiest and hardiest type of the Labrusca class."

The Early Victor was originated by John Burr, of Leavenworth, Kansas, in 1870. He was an advocate of natural fertilization, believing that nature selected, under the environment, the pollen most congenial to perpetuate its species. He planted in his garden Catawba, Bland, Isabella, Hartford, Delaware, Concord, Salem and Goethe, and permitted no others to grow near enough to pollinise them. First he selected the Concord, taking the seed from the finest bunches, but after trying seedlings from it and from Isabella, Hartford and others of the distinctly Labrusca type, he selected seeds from the Delaware, and the very first sprout was Early Victor.

Mr. John Burr passed away in 1892, being of the same age as the Century, after a life of much unselfish devotion to the interests of fruit growers.

The following is our description of this grape as it grows in Ontario.

ORIGIN: John Burr, Leavenworth, Kansas, from seed of Delaware fertilized with a vigorous grape of the Labrusca class.

VINE: Very vigorous, very productive and healthy.

BUNCH : 4 inches long by $3\frac{1}{2}$ broad, shouldered and very compact.

BERRY : Medium, round, black, with thick blue bloom, adheres well ; pulp tender, juicy, sweet and agreeable ; seeds, two.

SEASON : August 25th, (1899.)

QUALITY : Very good for dessert.

VALUE : Good for home market ; also very good for making claret wine.



FIG. 1823. DRAWING OF LIVING WORM, ABOUT NATURAL SIZE, SHOWING THE UNUSUAL SHAPE OF THE HEAD, AND THE STREAKS RUNNING LENGTHWISE.

A PECULIAR GREENHOUSE WORM.

THE florist of the College greenhouses, and two or three of the students, have occasionally come across, among the broken tiles of flower-pots, a peculiar flatworm, which they submitted to me for identification. Through lack of time for a thorough study of this worm I delayed investigation until a few days ago, when a careful search was made in the forcing house for good live specimens. I procured six large worms without much difficulty from the under surface of a few old boards which were lying on the moist, warm ground.

When at rest these worms have the appearance of dead, partly collapsed creatures which have already entered the early stages of decomposition, but a change comes over the scene when they are disturbed from their rest. The body becomes filled out, and begins to move. A copious supply of slime is exuded from all parts of the surface of the body, and wherever it travels it leaves a streak of slime behind it to mark its path. (Fig. 1823.)

The largest of these worms which I have seen measured about nine inches in length when fully distended, while smaller ones scarcely exceeded five to eight inches.

A peculiar feature of this worm's structure is the sucker at its anterior end. This organ is semi-circular, or crescentic, in outline, and probably functions both as a sucker and as a sense apparatus. By means of the sucker the hind portions of the body are brought forward by the contraction of the muscles, and with the aid of the eye-spots and olfactory pits on the margin of the sucker the worm secures the information so desirable in traversing an unknown region.

The shape of the sucker varies considerably while locomotion is taking place. Occasionally the front edge is serrated, and at other times it is notched. Fig. 1824, *e.f.g.h.*) The upper surface of the body is marked by three dark colored lines running lengthwise from sucker to tail, the middle line being darker and thinner than the two laterals. On each side is other dark lines similar to the middle one on the upper sur-

face. The under surface is also marked by dark lines which are wider apart on the anterior half than on the posterior half of the length of the body.

The mouth is situated on the under surface near the middle of the body. This feature is not readily seen in a living specimen, but is quite conspicuous in a specimen which has been dropped into dilute alcohol. The pharynx is then apparently everted as a white fringe of skin surrounding the opening. (Fig. 1824 a.)

The mode of locomotion is peculiar. The head seldom touches the ground, then only the lips, which are constantly changing shape, which are sometimes serrated, sometimes bifid. There is little of the sinuous movement so characteristic of the earthworm, but there is a muscular contraction which sends a wave backward from the head. According to a reliable authority, however, two rows of cilia, or fine threads, on the under surface of the body form the chief means of propulsion.

As to the position of this worm in the animal kingdom there seems to be little doubt that it belongs to the *Flatworms*, and on account of the presence of cilia on the lower surface of the body, and a three-branched intestine, it is classed among the *Triclad Turbellarians*, or more popularly, *Land Planarians*. This particular worm is known scientifically as *Bipalium Kewense*, a species indigenous to tropical regions, whence it has been carried to various countries with exported plants. It has already been found in hothouses in England, Germany, the Cape, and Sydney, Australia, but so far as I am aware, has not before been noted in Canada.

The Land Planarians are carnivorous, and feed on earthworms, slugs, wood-lice and insect-larvae. Lehnert states that "*Bipalium Kewense* pursues earthworms, seizes the upper surface of the anterior end by the glutinous secretion of its ventral surface,

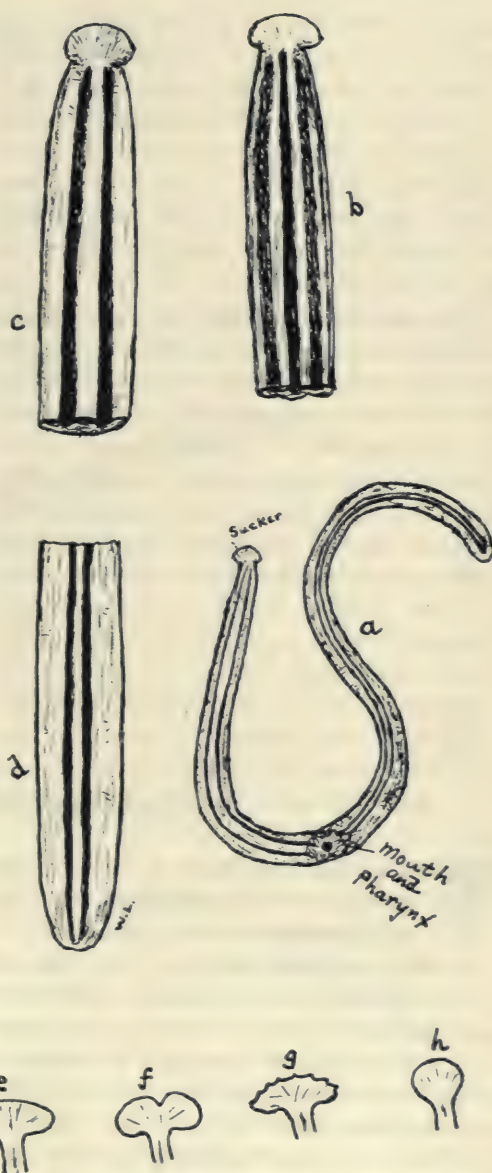


FIG. 1824.

(a) Worm in alcohol, contracted, showing the mouth on the under surface.

(b) Upper surface of front portion of worm, showing the three dark bands.

(c) Under surface of front portion of worm, showing the two dark bands and the intestine between the n

(d) Under portion of hind portion of worm, showing the two dark bands closer together.

(e f g h) Different forms taken by the head when worm is alive.

and then proceeds to envelop part or the whole of the worm within its pharynx, which is stretched as a thin skin over the body of its struggling prey. The tissues of the latter pass into the intestine of the Planarian and distend it greatly. After such a meal, which lasts from one to five hours, a *Bipalium* may remain for three months without seeking food."

The specimens of *Bipalium Kewense* obtained in European greenhouses never attain sexual maturity, but reproduce by division into fragments, each of which can reproduce all the organs of the parent.

My principal reason for describing this worm is to draw the attention of all florists to it so that we may learn more about its introduction into America. The florist at

the College here tells me that he first saw this worm three years ago. It has been known in England for over eight years. It is not a worm to be feared, and hence there need not be any alarm in the matter. I wish, however, to hear from any person who has seen this worm in his greenhouse.

WM. LOCHHEAD.

Ontario Agricultural College.

Guelph, May 3, 1900.

NOTE.—Since making this study, Miss Ormerod's reference to the same worm in her Report of Injurious Insects for 1899 has come to hand. The worm was evidently new to her, for she asked her correspondents to send it to the British Museum authorities for identification. In a footnote Miss Ormerod gives a valuable reference to the literature of Land Planarians: "Note of *Bipalium Kewense*, and the generic characters of Land Planarians" by Prof. F. Jeffrey Bell, M. A., in proceedings of the Zoological Society of London, 1886, part II., pp. 166-168. W. L.

HOME-GROWN FERTILIZERS.

THE fertilizer season has arrived, and the farmer is wondering what he shall feed his crops this year.

Commercial fertilizers have to be bought in some cases, but they should be looked on as a last resort. The recent sharp advances in the price of crude stock used in the manufacture of fertilizers, notably those furnishing nitrogen, make it more important than ever that the farmer look after the manurial resources of his farm. He must take more care to avoid unnecessary losses of plant food through careless methods of handling manure.

Nitrogen is probably the easiest of the fertilizing elements to secure on the farm. It grows in clover, beans and similar crops ;

it is prominent in all good barnyard manure and it is present in considerable quantities in some of the muck beds which are to be found in many parts of the country.

The liquid manure from cattle is richer in the amount as well as the quality of the nitrogen than is the solid. It follows that measures should be adopted whereby this portion can be saved and added to the solid manure, so that both may play their due part in keeping up the fertility of the farm.

Where the manure is not immediately applied to the land it should be so kept that it will not be exposed to the leaching or dissolving action of rain, as this necessarily causes a deterioration in value.

VERMONT EXPERIMENT STATION.

PLANT PARTNERSHIPS.

Οὐδεὶς ἑαυτῷ ζῇ. — St. PAUL.

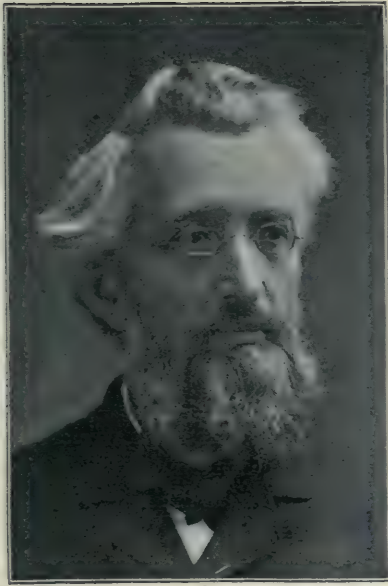


FIG. 1825. MR. D. W. BEADLE.

THIS truth, enunciated by the great apostle is of wide application, it applies not only to man, but to all life, both animal and vegetable. Such is the interrelation of all living creatures that it is quite apparent that "no one lives to himself." From minutest infusoria to the largest animal, from the microscopic lichen to the royal oak this interdependence exists. That this fact has sometimes a very practical bearing upon the work of the horticulturist, this paper is intended to illustrate.

Careful students of plant life have ascertained that a considerable number of trees, shrubs and herbaceous plants are dependent upon the assistance of some other living plant to maintain life. Attempts to grow seedlings of beech and fir in soil from which

other plant life was strictly excluded, have always resulted in failure. For a short time they struggled on in a puny way and died. As in the fable, the lion, notwithstanding his great strength, was obliged, in order to save his life, to avail himself of the help of the feeble mouse, so the royal oak, that it may live, must accept the aid of the most feeble of plants.

Anton Kerner von Marilarun, Professor of Botany in the University of Vienna, in his Natural History of plants, states that all plants of Pyrolaceae and Vaccinaceae, wintergreen and whortelberry families; most if not all Ericaceae, Betulaceae, and Fagaceae heath, birch and beech families; a great number of the cone-bearing evergreens and some others, are dependent upon the assistance of a fungus partner for life and growth.

Readers of the Canadian Horticulturist will surely have made the acquaintance of some of the members of that extensive family of cryptogamous plants called fungi, and doubtless regard them as they do the San Jose Scale, enemies to be if possible exterminated. They will remember that fungi have no green color, neither roots, flowers, nor seeds; that their vegetative parts are usually hidden from observation, and only the organs of reproduction exposed to view. Some feed upon living plants, the parasitic; others upon decaying vegetable or animal matter, the saprophytic. Of the latter group some enter into a mutually beneficial arrangement or partnership with green-leaved plants, termed symbiosis; a word compounded from the Greek, which means living together.

In order that the process by which this partnership is formed may be clearly understood, let us recall the manner of growth of

these flowerless plants. We have said that fungi do not produce seeds, instead they produce great quantities of small bodies about one-twenty thousandth part of an inch in diameter called spores. These have no cotyledons, nor plumule, nor radicle as do seeds; but when a spore is deposited by a current of air on leaf or fruit of a flowering plant, or on decaying substances, and temperature and moisture are favorable, a thin-walled tubular cell emerges from the spore, which may either pierce the thin epidermis of the leaf or enter by some natural or accidental aperture. In the case of the saprophytic fungus there is usually no hindrance to its entrance. When once within it begins to draw nourishment from its host, to extend and to branch out. These tubular cells are called *hyphae*; those of the parasitic fungi have the power of decomposing the cell walls of the host plant, thus gaining access to the contents upon which they may be said to feed. When a network or mesh is formed by the branching and interlacing of the *hyphae* this network is called *mycelium*. Mushroom growers call it the "spawn."

The manner in which fungi assist the flowering plants and form the partnership with them that is to last for life is very simple. When germinating seed of a flowering plant sends its radicle into soil in which the appropriate fungus is growing the *hyphae* wrap themselves around the rootlet, soon covering it more or less perfectly with a mantle, a mycelial mantle. As this root grows, extending and branching in any direction, the fungus grows with it, wrapping it whithersoever it goes in its mycelium, continuing the process as long as the plant, be it herbaceous or ligneous, lives, even though that life endure for centuries. In some cases the mycelial mantle is but as a gauzy spider's web, in others a very thin evenly woven larger, or again it will be thickly woven, completely covering the root out of

sight. Mineral salts and other inorganic compounds requisite to the growth of the flowering plant are taken up by this mycelial mantle, and by it imparted to the epidermal cells of the root it enfolds, to be carried thence through stem and branches to the foliage where they are elaborated, digested as it were, changed from inorganic to organic, and go to build up the plant in all its parts. In return for this service the fungus receives from the flowering plant such organic material as is necessary to its growth, which, not having green leaves, it is unable to manufacture out of inorganic material, which organic matter is brought down from the foliage of its partner through the branches, stem and roots, and delivered to the absorbent cells of the mycelium. Thus a mutually beneficial copartnership is established between a flowering and a flowerless plant; this partnership is termed symbiosis, and the several members symbionts.

The discovery of this symbiosis has revealed to horticulturists the cause of the difficulty experienced in transplanting successfully plants of the families named above, and of propagating by cuttings oak, beech, whortleberry, rhododendron, laurel, trailing arbutus, etc. This has been found to be easily obviated by taking pains to obtain with the plant to be transplanted a supply of its symbiont. This can be done by securing a large ball of earth adhering to the roots proportionate in diameter to their spread, if possible to their minutest extremities and even beyond. Care must be taken to prevent the soil thus taken from becoming dry at all during the process of transplanting, for that would cause the death of the symbiont fungus. Also in propagating from cuttings, if a liberal supply of the mould containing the symbiont is abundantly mixed with the sand there should be no difficulty. It must, however, be constantly borne in mind that there will be no living *hyphae* in dry mould, the mould must be moist when

taken and kept moist, not soaking wet. In the spring of 1899 the writer saw thousands of plants of several genera of Ericaceae in healthy growing condition propagated from cuttings; and hundreds of oaks being transplanted, and conifers, each with its large ball of earth securely held in place by a warp of coarse sacking large enough to hold the ball securely in place and be brought up and tied at the base of the trunk.

The woods of Ontario can supply our flower gardens with many handsome and interesting flowering plants hitherto neglected because we did not know how to grow them. The round leaved wintergreen, *Pyrola rotundifolia*, with nodding very fragrant white flowers, grows in dry woods and in swamps. The bog wintergreen, *Pyrola uliginosa*, has purple flowers. The liverleaf wintergreen, *Pyrola asarifolia*, also grows in bogs, swamps and wet woods, flowers rose color.

Labrador tea, *Ledum*, *Greenlandicum*, grows in swamps, the white flowers abundant in terminal umbels.

Sheep laurel, *Kalmia angustifolia*, is exceedingly showy when laden with its purple or crimson flowers. It is very abundant in swamps and wet places in Muskoka and Northern Ontario.


Swamp laurel, *Kalmia glauca*, flowers borne in simple umbels, light purple, is common in the swamps around Gravenhurst.

Trailing arbutus, *Epigaea repens*, known to many as the beautiful, sweet scented Mayflower, delights in sandy soil and rocky woods. A few years ago it was common in the vicinity of Toronto, but is becoming scarce. These members of the wintergreen and heath families could be grown in the flower garden by giving attention to their requirements in the matter of soil and partner.

D. W. BEADLE.

307 Givens street, Toronto.

SPRAYING OF CHERRY TREES.

 THE Bulletin of the Hatch Experiment Station, Massachusetts, for March, 1900, states that wormy "fruit has grown less in amount each year since regular spraying has been practised, and the crop has been one of considerable profit. Careful experiments show that the *Monilia*

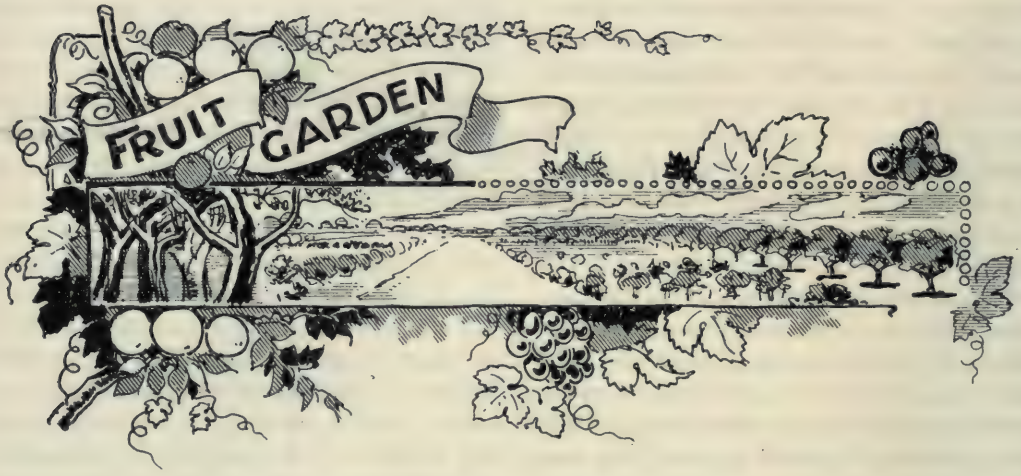
which sometimes causes the fruit to rot on the trees, or very soon after picking, can be largely prevented by spraying *after every rain* with the copper sulphate solution, 3 ounces to 50 gallons of water."

D. W. BEADLE.

307 Givens street, Toronto.

PRUNING.—In the pruning of pyramidal fruit trees of all sorts care should be taken to encourage the formation of natural fruit spurs in preference to artificial ones; this is the rock on which many a young gardener and amateur has split by following the orthodox system of summer-pinching, as it is called. If a free growth is allowed during the summer and the branches kept thin, admitting a free circulation of sun and air among them, the wood will ripen properly,

and at the base of every leaf a bud is formed which will ultimately become a natural fruit spur. In the case of some varieties, such as the Jargonelle and Williams' Bon Chrétien Pears, it will be found that the terminal bud of one year's growth will be a fruit or bloom bud; in such a case it will be advisable to pinch it out, which will strengthen the side buds, and in the following year they will become natural fruit spurs.—*Journal of Horticulture*.



FRUIT CULTURE.—V.

THE PEACH.

WHILE a few hardy varieties may achieve a partial success in colder districts, the culture of the peach is not likely to be satisfactory where the thermometer habitually registers more than 10 degrees below zero. In Ontario the counties of Lincoln, Welland, Monck, Wentworth, Essex and Kent include the areas where peach growing is likely to be permanently profitable. A winter like the past, when, during February (1899), the thermometer in these districts several times touched a lower point than that mentioned, plainly demonstrates the truth of the statement.

PLANTING AND PRUNING.—The trees to be planted should be thrifty and straight, one year old from the bud. The process of planting has already been described. The mark, where the old stock was cut off and the bud grown from, should be at a level with or slightly below the surface of the ground. Before setting, the young tree should be carefully examined for the peach borer, which may often be found on nursery stock; and for root galls, which are somewhat similar

to those on the raspberry and apple. See Figs. 90 and 14. Trees with galls should be rejected. The head of the young trees should be started at from $2\frac{1}{2}$ to $3\frac{1}{2}$ ft. from the ground. If lower than this, there will be difficulty in cultivation, from the inevitable spread of the lower limbs; and if higher, picking will be less easy, and a top-heavy tree will be the result, which will be put to a severe test in high winds and under a heavy load of fruit. There are two systems of pruning the peach, both of which have strong advocates. In the one case the previous year's growth is shortened in one-half every season, a bushy and comparatively low head being attained. In the other system the inner wood is thinned out and the head is more open, with the branches following their natural growth. Whatever system is followed, the pruning is the same the first year or two, while the head is being formed. Figs. 25 and 26 show the method of treating the tree when planting. Fig. 27 illustrates the second year's pruning, enough branches being left to form a spreading vigorous head. Occasionally a top will die back or fail to pro-

duce good growth from the upper buds. In such a case it is better to select the strongest of the young shoots and make a fresh trunk. Figs. 28 and 29 will illustrate the point. The shortening in system has a tendency to produce a stocky growth with a greater amount of bearing wood. The shortening in, however, is in itself a thinning process, and when a comparatively small proportion of live buds remain after a severe winter, too much of the crop may be thus pruned off. After the trees attain a considerable size the practice is seldom followed, partly from the expense and partly because of the vigorous growth of the tree. As long as dead wood is removed and broken, and crowded limbs pruned out, the actual method of pruning is of far less importance than the



FIG 27

MICHIGAN BULLETIN
PRUNING AT END OF TWO YEARS.



FIG 25 PRUNED FIG 26 UNPRUNED
BULLETIN A COLL MICH

proper manuring and cultivation of the orchard.

Fig. 30 is an example of the open-made tree, with branches following the natural growth.

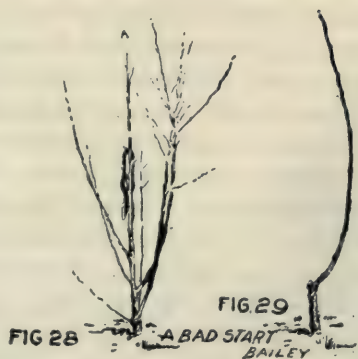
In Fig. 31 is illustrated the system of pruning by shortening in. This forms a photograph of a three-year old tree of the variety Hyne's Surprise.

In Fig. 32 is seen a three-year old peach, taken on July 26th. These trees have also been regularly shortened in.

SOIL AND LOCATION.—Many of the remarks made under "General Principles" will hold good in the case of the peach, but proximity to a body of water is of more importance than the kind of exposure. The ameliorating influence of a large body of water is so great and, with the peach, a few degrees of winter temperature one way or the other is often so important a matter, that the point should be allowed great weight in the choice

of location. Speaking generally, a soil that is very good for corn is the best peach soil. A fairly light, warm and deep sand is probably most suitable, and especially if the subsoil is gravelly or of a fairly porous character. The peach, of all trees, demands a well drained soil, and with no kind of fruit will underdraining pay so well.

DISTANCE OF PLANTING.—Growers differ widely as to the appropriate distance between peach trees; as near as 14 feet, and as far as 20 feet apart being advocated. The trees in the famous Hale orchard are only 13 feet apart, but the most thorough pruning and manuring are practiced, and the plan is not generally advisable. When spraying, cultivating, proper ripening and coloring of the fruit are all taken into account, it will be found that a generous space



between the trees is preferable. At least 18 feet each way is strongly advised.

CULTIVATION.—To secure the best results the cultivation of the peach must be thorough and constant. No tree will so soon suffer from neglect in this respect. Hoed crops alone should be allowed in the peach

orchard, and these should be discontinued after the third year. The practice of growing berries between the trees can only be followed at the expense of the trees. For the first two years strawberries might be allowed, but the amount of moisture evaporated by the plants and fruit is incredible to those who have not studied the matter, and there is always the tendency to crowd in on the tree rows. If raspberries are placed amongst the peach trees one row is enough with a row of roots or potatoes each side. The root



FIG. 30

BULLETIN
AGRI. COLL MICHIGAN
PRUNING BY THINNING OUT.

system of the raspberry has been illustrated in Fig. 4, and with two rows of raspberries between trees, even eighteen feet apart, it will be found that by the third year the roots of the trees and the berries are fighting in the same soil for moisture and food. Nothing but the highest manuring and cultivation under such circumstances can put the

MANURES.—The manuring of the earlier years of a peach orchard should be similar to that of the apple orchard. When the fruiting time comes the tree takes up large quantities of potash, and a dressing of seventy to eighty bushels per acre of unleached ashes will be profitably applied. If ashes are not conveniently obtained, muri-



trees in first-class condition. Towards the end of July the ground may be plowed to the trees and a clover crop, preferably mammoth clover or crimson clover, sown. The writer has had excellent results with the latter, even a severe winter like that of '98-'99 leaving enough of the clover to plow down in May and add much humus and direct plant food to the soil.

ate of potash will be the best form to apply the potash in. The commercial muriate usually contains about 50% of actual potash, and a dressing of some 400 pounds to the acre would be a fair equivalent to the amount of ashes suggested. If the muriate is used a dressing of phosphoric acid in the shape of bone meal or phosphate should also be applied. The grower must decide these

questions for himself. Briefly, when the trees are fruiting and at the same time the foliage is a healthy green and a fair growth of new wood is being made, the orchard has enough nitrogen and the manuring should be in the direction of potash and phosphoric acid. If, however, the growth is at all feeble and the foliage sickly, nitrate of soda—150 lbs. to the acre—or barnyard manure should be immediately applied.

tree would cover the expense, and if the tree is not thinned there is the extra labor to be faced in picking the additional number of peaches at the time of maturity. The fruit should be thinned when the size of small hickory nuts and left not less than three or four inches apart. The profits from such a process are large and undoubted, as all growers who have tried it will testify. For fuller information on this point readers are



THINNING.—This is so important a feature of successful peach culture, and the practice of thinning is so little followed, that a few remarks on the subject will be in order. Thinning lessens the strain on the vitality of the tree, the strength of the tree going not to the pulp but to the seed. It allows of a more even distribution of the fruit and thus saves a frequent break-down. It increases the size of the fruit. It diminishes the danger from rot. As far as the labor of thinning is concerned it is a comparatively small affair. From ten to twenty cents a

referred to the excellent bulletin by Prof. Craig, No. 1, Second Series, of the Central Experimental Farm.

VARIETIES.—Local conditions must decide the variety question to a large extent. Of the earlier kinds two of the best commonly planted are *Early Rivers* and *Hynes's Surprise*. Next in order of season come *Yellow St. John*, *Mountain Rose* (white), *Early Crawford*, *Reeve's Favorite*, *Elberta*, *Old Mixon*, (white), *Late Crawford*, *Wager*, *Smock* and *Steven's Rareripe* (white).

DISEASES AND INSECTS.—Chief among the diseases in point of destructiveness comes the "yellows." The origin and exact nature of this disease are unknown. It is highly contagious, and will ordinarily destroy a tree in three years. Though an On-

and wiry growths shown in the three central twigs in Fig. 33 will enable the grower to diagnose the case. Each outside twig in this figure is a normal twig.

Leaf-curl is a highly injurious fungous disease affecting the peach. Fig. 34 shows



tario statute provides for its destruction the law is often a dead letter owing to the apathy of the local authorities. The wise man will take out at once and burn any tree showing symptoms of this disease. The premature ripening and spotted appearance of the fruit is a sure sign, and the sickly yellow foliage

the typical appearance of a diseased twig. Three remedies exist for this trouble. Spraying with Bordeaux mixture, once before the blossoms open and once after will do much to control it. Whale oil soap, one pound to the gallon, has been thoroughly effective in Ohio, applied immediately before the

bursting of the buds; and using a white-wash as a winter spray. For the last remedy readers are referred to the Bulletin of the Ontario Agricultural Department "Instructions in Spraying."

Rot or *Monilia*. This fungus, which also affects the plum and cherry, is worse on early varieties and in a wet season. In gar-

dens where only a few trees are grown the affected specimens should be picked off and destroyed. A systematic use of the Bordeaux mixture will check it to a considerable extent.

The two most injurious insects to the peach are the curculio and the peach-borer. Paris green, four ounces to forty gallons, with a pound of lime added, will check the former. A thick wash compound of cement and skim-milk applied early in July will also be effective, and will prove more adhesive than any other wash.

M. BURRELL.

St. Catharines, Ont.



CENTRAL EXPERIMENTAL FARM NOTES—VIII.

UP to the 13th May there was very little warm weather at Ottawa; the latter part of April and early part of May being exceptionally cool and dry, and the frost late in leaving the soil. So cool did it become on the 10th and 11th May that the thermometer registered four and five degrees of frost, respectively, on these dates. Owing to the backward spring and the cool weather which preceded these severe frosts, there had not been very much growth, and what there was had been pretty well hardened; the result being that very little injury was done. A few apple and plum blossoms were injured at the Experimental Farm, but the majority appear to have been unhurt. On the 8th May there was a much needed rain, but the weather continued cool until the 13th, when it became warmer. On the 14th the thermometer registered 86° Fahr., and one felt for the first time this year that the growing season had begun.

Nearly everything that is usually hardy came through the winter in good condition, and the prospects at present are that there will be an abundant crop of apples, plums, cherries, and small fruits.

The Ontario apple is evidently not going to be hardy at Ottawa, unless it succeeds when top grafted. Several young trees were killed to near the ground last winter in the orchard here. An older tree also died last year. Most of the apple trees are looking well, and many varieties have been found to be of no value in this part of the country, the fruit being of an inferior quality, the trees have been removed to make way for other kinds. In order, however, not to lose sight of these varieties they have been top grafted, a number of sorts being on one tree. The majority of these varieties are of Russian origin.

The fine collection of American plums which is now in the orchard at the Experi-

mental Farm should be particularly interesting this year. It is time that these plums were more widely grown in the colder parts of Canada. Some of them are very large, and many of them are of good quality and heavy bearers. It is to be hoped that our nurserymen took advantage of the recent opportunity for importing stock from the United States to get a supply of some of the best varieties of these plums. The American plums would be much appreciated in those districts where the native wild plum is affected with blight, which has been so persistent for many years past that there is very rarely a crop of good plums unless the trees have been sprayed.

From present indications the crop of cherries should be large this year. A few more trees died last winter, root-killing being the cause in most cases. As far as we know, none of the trees which died were grafted or budded on the native bird cherry—*Prunus Pennsylvanica*. Trees budded on this stock in 1891 are still vigorous, the union is perfect, and we believe that for the colder parts of Canada this is one of the best, if not the best, stocks in use. The cherry orchard has been practically replaced during the past three years by trees worked on this stock, and this will afford a good object lesson as to the value of the bird cherry for this purpose.

As has been mentioned in previous notes, extensive experiments have been carried on in the Horticultural Department during the past few months to determine the value of lime as a remedy for the oyster shell bark louse. From results obtained last year we were convinced that lime, spread on the trees, would remove nearly all the scales from the trees, if the scales were covered by it. Our experiments this year are confirmatory. No injury to apple trees from the use of lime can be discovered. While the necessary data to determine the most econ-



FIG. 1826. CHARLES X LILAC, AT CENTRAL EXPERIMENTAL FARM.

omical formula will not be available for some weeks yet, we feel confident that spraying trees in the autumn when the trees are dormant, with a lime mixture, will prove the best, simplest and cheapest remedy for the oyster shell bark louse yet known.

The latter part of May and the first half of June is the season during which most of the flowering shrubs are at their best. At the Experimental Farm there is a collection of more than one hundred species and varieties of lilacs alone. These begin blooming during the third week of May, and there is a succession of these beautiful and popular flowers from that time until the end of June. In the Canadian Horticulturist for May, 1899, there is an article by Mr. Wm. Saunders, in which descriptions are given of

some of the best of these, also of those which are required if a succession of bloom is desired. The double and single varieties and the dark and delicately tinted purple ones are especially fine.

One of the best hardy spiræas is comparatively new species called *Sarguta*. This is a very early flowering sort, being in bloom about the same time as *Spiræa Thubergii*, but is hardier than that species and of more graceful habit. Following this is *Spiræa Von Houttii*, which is a beautiful shrub of pendulous form bearing a profusion of dainty white flowers. Although this shrub is being more extensively planted, it will probably be a long time before there are too many of them. The Japanese quince, which bears a profusion of bright red flowers, is one of the best flowering shrubs where it can be grown successfully, but at Ottawa it is not very satisfactory, as the wood is not perfectly hardy and the flower buds are winter-killed to within a short distance of the ground every year. There is another species called *Pyrus (Cydonia) Maulei*, the flowers of which are also fine, which is quite hardy at Ottawa, the flower buds and the wood being seldom injured by winter. It is one of the most desirable of the shrubs which bloom in May.

The following is a list of some of the best perennials which bloom in June :

Alum-root (*Heuchera sanguinea*) ; German Iris (*Iris germanica*) ; Oriental poppy (*Papaver orientale*) ; Oris root (*Iris florentina*) ; Gas plant (*Dictamnus albus purpureus*) (*Fraxinella*) ; Jacob's Ladder (*Polemonium coeruleum*) ; Double flowered Dropwort (*Spiræa Filipendula fl. pl.*) ; Large flowered Gailardia (*Gillardia aristata grandiflora*) ; Double Sneezewort (*Achillea Ptarmica fl. pl.*) ; Lance-leaved Tickseed (*Coreopsis lanceolata*) ; Yellow Day Lily (*Hemerocallis flava*) ; Dumortier's Day Lily (*Hemerocallis Dumortierii*).

W. T. MACOUN,
Central Exp'l Farm, Horticulturist.
Ottawa.

THE QUARTER ACRE LOT OR ORCHARD.

THE quarter acre lot and orchard, I think, is a fit subject for my paper, as in towns and also a large area of the cities we either own or rent a house with a quarter or half acre of land; therefore, I think this paper should demand a considerable amount of discussion. But before I enter into the quarter acre lot and orchard, I would say to the young men of both city and town that there could not be any nicer or better, or, perhaps, any more profitable study than the orchard. Let a schoolboy in his early 'teens take the seed of the apple, pear or plum; let him sow them, and what a delight it will be to him when he will first see the tiny little leaflets peep through the soil. Then he becomes interested as he watches the growth, until the time comes for to graft or bud that stock with his favorite fruit, and there he does assist nature in her grand design; and still he watches its advancement, and before he is through with his study he receives his reward, for the tiny little leaves that he first watched coming through the soil is now a large tree loaded with delicious fruit. Oh, what a happy thought and what pleasure for that young man when he grows to be an old man to think that he assisted nature to some degree! But I fear I have lost sight of my quarter acre lot and orchard. And now, by way of illustration, say a quarter acre of land contains, as most lots are laid out, 112 x 56 feet. Now, take the site of our house and yard; of the quarter acre, what is left for the orchard? The house will be 15 feet from the street line, house and shed 40 feet, which will leave about 57 x 56 feet, on which can be planted 10 fruit trees—1 early apple, 2 late apple, 2 plum trees, 2 pear trees, 1 cherry and 2 winter apple trees; and beside these say 6 gooseberry, 6 currant, a few raspberry bushes and

some grape vines and a small bed of strawberries, and yet there will be room for a few rows of early potatoes and other vegetables. Certainly as the trees grow in size the ground will be covered by them, and it will not be fit for vegetables. And if we only knew the benefit of good ripe fruit to our health, we would use more of it. But, sir, we are told that when they are got from the store the fruits are half ripe and wilted after lying in the shop window for several days, and I do believe that is one reason why the people do not use more fruit. But the quarter acre orchard will get over all that. What nicer amusement can the merchant wish for, after being all day in his store, or the mechanic after leaving his work; it may be some dusty workshop. Yes, and even the hard-toiling laborer will find pleasure in going into his little garden and spend a short time among his fruit trees and vegetable beds. It is much better than loafing at some street corner or tavern door. In his garden he will reap his reward, for early in the season when the good wife goes into the garden and gathers in the nice fresh vegetables, which we all long for at this particular time of the year, we can truly say it is the reward of his labor. And when the fruit season has come, and again she takes a trip into the garden and plucks the first plate of strawberries or raspberries, and, how tempting, those few lovely apples, plums for preserve, or those nice cherries for the little children. And of a winter's evening, after supper, the wife brings up a nice plate of apples from the cellar, will not the husband and children be delighted? And all this from the quarter acre lot!

T. CONOLLY.

A paper read before the Lindsay Horticultural Society.

THE BEN DAVIS CONTROVERSY.

IT WAS not really my intention to add another word to the controversy on the Ben Davis which has been carried on in *The Horticulturist* for many months past. But on communicating with Professor Craig, whose opinion was cited by Senator Ferguson as against the longevity of this particular tree, I find that he in nowise bears out the Senator's view. On the contrary, he fully justifies my own contention that the deterioration he spoke of at Halifax must apply in a commercial sense to the fruit and not to the tree. "A misapprehension will not down until it is plainly corrected," writes the Senator, in the April number, and as there has evidently been a misapprehension of Professor Craig's words on somebody's part (not mine), I beg leave to state the case in dispute clearly and terminate with the authority which practically settles the case.

In an article in last year's *Horticulturist*, I marvelled at an opinion expressed to me by Senator Ferguson, who had recently returned from a trip to Nova Scotia, that the Ben Davis tree was a "slow grower" and of "short duration" in that province, and also in Eastern Prince Edward Island. The estimable Secretary of the F. G. A. of Nova Scotia immediately took the matter up, and declared that the tree was as great a grower in his province as I found it to be here, and as to duration, that was a question for time to determine. I rejoined that this must necessarily be so; but that a portion of a discussion in the N. S. report for 1899 conveyed the same impression as did the Senator's words. Professor Sears was concerned in the citation, and he comes to the rescue by saying that the Davis was not intended by the parties to the discussion to be regarded as a "slow grower," but the Gravenstein a more rapid grower, and, therefore, not desirable as a top graft on

such stock. And he modifies this somewhat by adding that this is not so much so because the Gravenstein can outgrow the Davis (which is questioned very generally), but because the former has the habit of making comparatively few large branches, whilst the latter divides up into numerous small ones. Senator Ferguson also invokes his splendid paper, read at the late annual meeting of the F. G. A. of P. E. I., in which he says "that Professor Craig does not regard it (the Ben Davis) as a tree that will, as it grows old, continue to bear the best fruit"; still holding, all will observe, to the idea that this tree must be short lived. I could never discover the data on which such an opinion was based. When the Senator read the passage in question before the association, I made bold to interrupt him and say: "Did Professor Craig really declare that the tree would not last, or did he say the present place of its fruit in public favor would not last when it became better known?" "He said, in his opinion, the tree would be of short duration," the Senator replied. "Well, we ought to know," I added, "on what he bases this opinion." Now, it transpires that with those gentlemen the tree and its fruit have been interchanged with undue freedom. No mortal man ever contended that the fruit, especially as grown with us, could ever be regarded as No. 1. It will grow well, keep clean easily, fill the barrel surprisingly, suffer all the incidents and accidents of transit, and go on the market at Liverpool at a time when fruit is scarce, in splendid shape, and thus secure a good price; that is all. But the tree, as a tree, is grand. It grows like "a-house-a-fire," if you permit me a boy's phrase; stands extreme climatic changes admirably; is free from the enemies which beset other sorts, and wants less attention than any other tree we plant. Why it

should soon run its course, when it now gives every evidence of a fresh old age, I could not see. Professor Craig was cited as having issued its death warrant, and it had to die. The Professor was altogether misunderstood, and as his opinion, or a misconception of it, led to all this discussion, it was of prime importance that we should have it clearly expressed by himself. I have therefore great pleasure in appending the kind letter of the learned Professor herewith. It is in reply to a note from me asking for a categorical statement on the subject, and will be read with interest by even those Upper Province horticulturists who may perhaps betimes be bored by the iteration of maritime difficulties in these columns :

DEAR FATHER BURKE,—After a very long silence, I am glad to hear from you again. I have noticed one or two references to some remarks which I made somewhere regarding the Ben Davis apple—its present value, and its future prospects.

The Ben Davis apple tree is more at home in the Ozark regions of Missouri and Arkansas than anywhere else in the apple belt. It is extremely productive there. The apples grow to a fine size, and really are quite eatable when thoroughly ripe. The quality is better in that region than anywhere else that I know of.

The Ben Davis is being planted very freely all over the apple-growing region. The point is this—that it is an apple of very poor quality at the best, that it is much better adapted to this western country than to the east, and finally, that when its true merits are recognized upon the British and foreign markets the price is sure to fall, and people will discriminate between well-grown apples of this variety and other Ben Davises less handsome and of inferior quality. According to

my observation, the Maritime Provinces cannot compete—nor can New York—with Missouri and Arkansas, in growing the Ben Davis. I did not say that the apple, when widely grown, would deteriorate in quality, but I intended to convey the impression that its true quality would eventually become generally recognized, and that in time it would take its proper place in the markets of the world, and this, from the quality standpoint, would be near the bottom.

As far as the tree itself is concerned, I am of the opinion that it would be longer lived in Nova Scotia and on the Island than here in the west; but it originated out here, and it requires the warm suns and intense heat of our summers to improve the quality of the fruit and give it plenty of color.

I thank you for sending me a copy of your Annual Report, which is most interesting, and also for doing me the honor of placing me among your honorary members. I think your society is entering upon an era of prosperity, and I feel sure that it will do much to advance the fruit interests of the Island.

I have pleasure in sending you a copy of a bulletin on plums recently issued here, with the hope that you may find in it something of interest.

Yours very truly,

Ames, Iowa, April 20.

JOHN CRAIG.

It will thus be seen that the Ben Davis' "short duration," according to Professor Craig, is altogether of a commercial character, and even upon this point, many will agree to differ with him, while of the tree itself, the indications are that it will be enjoying as great an immunity from the ravages of time as it will do from the depredations of sneak thieves, without a change comes over present tastes—and *de gustibus non est disputandum*—when we are all gathered to our fathers.

Alberton, P. E. I.

A. E. BURKE.

Number of Trees or Plants on an Acre at Various Distances.

At 4 feet apart each way	2729
" 5 "	1742
" 6 "	1200
" 8 "	680
" 10 "	430
" 12 "	325
" 15 "	200
" 18 "	135
" 20 "	110
" 25 "	70
" 30 "	50

The number of plants required for an acre, at any given distance apart, may be ascertained by dividing the number of square feet in an acre (43,560) by the number of square feet given to each plant, which is obtained by multiplying the distance between *rows* by the distance between the *plants*. Thus, strawberries planted three feet by one foot gives each plant three square feet, or 14,520 plants to the acre.

THE APPLE AND PEAR MARKS ACT.

IN response to the request of our Association the Hon. Sidney Fisher has introduced an act to provide for the marking and inspection of packages of apples and pears for export, which reads as follows :

1. This Act may be cited as *Apple and Pear Marks Act*, 1900.

2. This Act shall come into operation on the first day of July, 1900.

3. Every person who, by himself or through the agency of another person, packs apples or pears in a closed package, intended for export, shall cause the package to be marked in a plain and indelible manner before it is taken from the premises where it is packed,—

(a) with the initials of the Christian name and the full surname and address of the packer ;

(b) with the minimum size of the fruit in inches ;

(c) with the name of the variety, and

(d) with a designation of the grade of the fruit.

4. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export unless (a) the name and address of the packer and (b) the diameter in inches (or fractions thereof) across the core of the apples or pears, as the case may be, are marked upon the package in a plain and indelible manner.

5. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked the grade "A No. 1 Canadian," or any similar designation, unless such fruit consists of well-grown specimens of one variety, of normal shape and not less than ninety per cent. in each package free from scab, worm holes, bruises and other defects, and properly packed.

6. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked the grade "No. 1 Canadian," or any similar designation, unless such fruit consists of specimens of one variety, sound, of fairly uniform size and not less than eighty per cent. in each package free from scab, worm holes, bruises and other defects and properly packed.

7. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export which are disqualified from being marked "A No. 1 Canadian" or "No. 1 Canadian," unless such package is marked "No. 2 Canadian" in a plain and indelible manner.

8. No person shall sell, offer, expose or have in his possession for sale any apples or pears packed in a closed package and intended for export upon which is marked any designation of size, grade or variety which falsely represents such fruit ; and it shall be considered a false representation when more than ten per cent. of such fruit are substan-

tially smaller in size than, or inferior in grade to, or different in variety from the marks on such package.

9. Every person who, by himself or through the agency of another person, violates any of the provisions of this Act shall, for each offence, upon summary conviction, be liable to a fine not exceeding one dollar and not less than fifty cents for each package which is packed, sold, offered, exposed or had in possession for sale contrary to the provisions of this Act, together with the costs of prosecution, and in default of payment of such fine and costs, shall be liable to imprisonment, with or without hard labor, for a term not exceeding one month, unless such fine and the costs of enforcing it are sooner paid.

10. Whenever any apples or pears packed in a closed package are found to be falsely marked, any inspector charged with the enforcement of this Act may efface such false marks and mark the words "falsely marked" in a plain and indelible manner on such package.

11. Every person who wilfully alters effaces or obliterates wholly or partially, or causes to be altered, effaced or obliterated, any inspector's marks on any package which has undergone inspection, shall incur a penalty of forty dollars.

12. The person on whose behalf any apples or pears are packed, sold, offered or had in possession for sale, contrary to the provisions of the foregoing sections of this Act, shall be *prima facie* liable for the violation of this Act.

13. It shall be lawful for any person charged with the enforcement of this Act to enter upon any premises to make an examination of any packages of apples or pears suspected of being falsely marked in violation of the provisions of this Act, whether such packages are on the premises of the owner, or on other premises, or in the possession of a railway or steamship company ; and any person who obstructs or refuses to permit the making of any such examination, shall, upon summary conviction, be liable to a penalty not exceeding five hundred dollars and not less than twenty-five dollars, together with the costs of prosecution, and in default of payment of such penalty and costs, shall be liable to imprisonment, with or without hard labour, for a term not exceeding six months, unless the said penalty and costs of enforcing it are sooner paid.

14. In any complaint, information or conviction under this Act, the matter complained of may be declared, and shall be held, to have arisen, within the meaning of Part LVIII of *The Criminal Code*, 1892, at the place where the apples or pears were packed, sold, offered, exposed or had in possession for sale.

15. No appeal shall lie from any conviction under this Act except to a superior, county, circuit or district court, or the court of the sessions of the peace having jurisdiction where the conviction was had ; and such appeal shall be brought, notice of appeal in writing given, recognizance entered into, or deposit made within ten days after

the date of conviction; and such trial shall be heard, tried, adjudicated upon and decided, without the intervention of a jury, at such time and place as the court or judge hearing the trial appoints, within thirty days from the date of conviction, unless the said court or judge extends the time for hearing and decision beyond such thirty days; and in all other respects not provided for in this Act, the procedure under Part LVIII of *The Criminal Code*, 1892, shall, so far as applicable, apply.

16. Any pecuniary penalty imposed under this Act shall, when recovered, be payable one-half to the informant or complainant, and the other half to Her Majesty.

17. The Governor in Council may make such regulations as he considers necessary in order to secure the efficient operations of this Act; and the regulations so made shall be in force from the date of their publication in *The Canada Gazette*, or from such other date as is specified in the proclamation in that behalf.

STUB ROOT PRUNING.

WE HEAR a good deal of late about the Stringfellow method of pruning trees, trees, which is the result of some experiments in close root pruning by H. M. Stringfellow, of Texas. He cuts off the top of a transplanted tree to say 12 to 18 inches high, and cuts off nearly all the roots, leaving only stubs an inch or two long. The ideas assumed by Mr. Stringfellow are that: (1) Seedling, non-transplanted trees are longer lived, hardier and healthier than the trees of orchards; (2) that this superiority is largely due to the presence of a tap root system, and (3) that the nearer a transplanted tree is reduced to the form of a young seedling or cutting, the greater is its tendency to develop a tap root system.

We do not believe in the theory nor in the assumption upon which he grounds it, and experiments made at Cornell University do not support it. The fact that a tree that has had its roots closely cut off may live and throw out fresh roots, is no argument that it would not have done better if the roots had not been cut.

Mr. Stringfellow, however, is very persistent in his theory, and means to put it into practice, as may be seen from the following clipping:

Orchardists and nurserymen everywhere have

been intensely interested in the revolutionary method of fruit-tree planting, advocated by Mr. H. M. Stringfellow, who, with the courage of his convictions, is now putting his theory into practice on his recently purchased land near Lampasas, Texas. The following extract from a letter to President Ramsey, of the Texas Horticultural Society is, as the latter says: "The first chapter in the history of an orchard that is going to be talked about and watched closer than any that has been planted since the days when Adam was superintendent of a truck patch and home orchard."

Mr. Stringfellow writes, in part: "I laid off my rows with a strong line and tags tied securely where the trees were to stand. I then measured and marked the ends of the rows, the rows being just long enough to allow of stretching the line nicely. This was all on virgin, unbroken prairie sod. I then got a two-inch iron bar, sharpened at the end, and three and a-half feet long and also a ten-pound sledge hammer. I had two men; one held and carried the bar, setting it at each tag, while the other man drove it down about one foot. It was heavy work and they had to alternate every five or six holes. Well, the first day I wore that iron bar off to 18 inches and drove 900 or so holes. The next day I tried a one and a-half inch bar and battered that away by night and drove about as many; the third day I got a one-inch steel bar, and that stood much better and drove about 1,200 holes. I then root-pruned all the trees and stuck them down to the bottom, pears in the larger holes and apples in the smaller. I had a wagon with a barrel of water and a half load of fine silt from a creek bed, with a boy to drive and wait on us. I dropped the trees, carrying two buckets, one of the earth and the other water, and a small tin cup. After sticking the tree in the hole they took and poured them slowly into the holes at the same time until filled up. This settled the earth nicely about the roots and stem. We set the whole 3,000 in less than three days. Every tree is growing fine. * * * Now, you just look out for the finest, healthiest and most productive orchard in the country."

MORE ABOUT THE PAPAWS.

THE species of Papaw mentioned by Mr. R. Cameron in the March issue of The Canadian Horticulturist as being native to Southern Canada is an old friend of my boyhood in Southern Ohio. It grows there to great perfection, some of the trees being fully a foot in diameter, although six inches is a large one; it is usually a bush. I have gathered fruit from the wild trees near my old Ohio home and also in Kentucky, Indiana and as far west as eastern Kansas that was more than six inches long and about half as thick. The aroma was sometimes so strong that I have been led to stop and hitch my team by the roadside and follow the scent of the ripe fruit through the thick woods for a hundred yards or more, and where I could not see the Papaw bushes until I got very near them. Many a rich feast have I had on such occasions. This fruit is worthy of culture.

But the Papaw mentioned as being found in South Africa is a very different fruit, both botanically and in point of flavor, size, shape, etc., of fruit. This is *Carica papaya*, which is an annual and is strictly tropical. It is properly called Melon Papaw, because the

fruit is about the size, shape and color of an average yellow muskmelon or cantaloupe. These large fruits are borne at the axils of the leaves, which are also very large and something like those of the castor bean plant. The stalk is straight and has no branches.

When cut open the fruit shows a flesh about an inch thick, and there are numerous small round seeds fastened to it. The flesh is yellow, very juicy and about as soft as that of a very ripe cantaloupe. The flavor is somewhat sweetish but rather insipid, and I always thought a little salt or sugar or both together added character to it. It is not so rich and agreeable, to my taste, as the true Papaw of America.

So far as the effect of the juice of the Melon Papaw in tendering beefsteaks is concerned I have never tried it, but this is said to be true. It may also be anti-dyspeptic, as Mr. Allan, of Africa, says, but anyone who would undertake to "grate" a ripe Melon Papaw would have a sloppy mess. Moreover, this fruit cannot be grown outside of tropical regions.

H. E. VANDEMAN.

Parksley, Va., March 20th, 1900.

ARRANGEMENT OF HOME GROUNDS.

SIR,—In looking over the last number of the Canadian Horticulturist (I am a constant reader of all the numbers) my attention was held closely to the first item in the "Question Drawer," entitled—"Arrangement of Home Grounds." Replying to the letter of inquiry, Mr. W. H. Manning says: "It is usually unwise to locate a house on the summit of a ridge for it makes the building unduly intrusive, etc." And further on he continues: "It is generally better to locate

at the side or at the base of a slope, reserving views from a higher level for occasional enjoyment or for enjoyment from upper windows." Looking back to "Subscriber's" letter, he says: "The view from position marked for house is grand, especially to the north." Let me ask a question: is subscriber more interested in presenting a picture for his neighbor to look at and down upon, or in being in a position where he can command a grand view at all times, and can

offer his neighbor the same privilege when enjoying the hospitality of his home? Who wants to climb a flight of stairs and to gaze from a bedroom window in order to get a grand view, when the same might be obtained from the first floor from the windows of the parlor, the library, the living room, where the whole family and visitors gather so many hours of the day?

If subscriber has sufficient land so he can afford to take seven acres for a lawn, putting his fruit trees in the background where they will not obstruct his view, he will be planning for great beauty and happiness in the future. He will secure for himself and family a restful breathing spot that will intensify the love for home. A lawn of that size is not difficult to care for; going over it three times a season with a scythe is sufficient to keep it in shape for walking over it. The more frequent portions could have a lawn mower run over them, leaving the cut grass on the ground for a mulch. A few years will give a turf so thick that constant running over it would make no impression.

Let me assure subscriber that he will never tire of his grand view, for he will never see it twice in exactly the same way.

The conditions in Canada are no doubt similar to those in Minnesota, and a scene that is grand in summer, borders on the sublime in winter, when seen in the peaceful purity of perfect rest only possible in regions of heavy snow.

The impressions of early childhood (the writer lived in Canada in those days "just over the line") are imbedded deeply in memory, almost as much so as Mother Earth herself is in the snows of winter.

Set out a few trees in an irregular group of five to seven, near the house—say the nearest about thirty feet from it, that will relieve the too great prominence of the house.

Then trim the trees as they grow so they will not interfere with views from the house. The bodies of the trees will form living frames for the beautiful pictures furnished by grand old nature. With evergreens and the hardy flowering shrubs, the prosy part of the home grounds—kitchen garden, barn and clothes reel may be made so many adjuncts to a harmonious whole.

Yours truly,

ANNA B. UNDERWOOD.

Lake City, Minn.

SUCCESS AND FAILURE.—During the autumn of 1899, there were sent forward from Grimsby to Great Britain in cold storage, for experiment, 127 cases of peaches, 3746 cases of pears, 1456 cases of apples, and 82 cases of quinces. Of the peaches, one lot of 28 cases sold at \$2.46 each; another of 30 cases sold for \$2.99; good prices surely for about half a bushel of fruit! Pears also have done well in every case in which they have arrived in good condition.

In one instance 145 cases of Bartlett's (less than half a bushel each) were sold in Manchester, for \$1.97 each, and netted in Grimsby \$1.54 per case. Another successful instance was a shipment of 242 cases of Duchess pears sent forward by A. H. Pettit & Sons, which were sold at \$1.97 in London, and netted \$1.40 in Grimsby. Our readers will find Mr. Robertson's full report in the Report of our Association for 1899, which is being sent out.



TIMELY TOPICS FOR THE AMATEUR—IV.

JUNE! floral June! the rose-month of the year, when the Rose with its fragrant, queenly blossoms, demonstrates, with more than its usual attractiveness, the right to retain among its many beautiful floral associates, the proud title so universally accorded it, as "The Queen of the Garden."

The Rose, however, has by no means the entire monopoly just now in the garden; as the fragrant blossoms of tree and shrub, as well as of many other plants, demand their share of admiration, from all lovers of the beauty so lavishly displayed at this time of the year, in the floral world around.

June also brings us many of the useful and healthful first products of the fruit and vegetable garden, that are so acceptable at this early summer season; and that so well repay the comparatively small amount of care and labor required to produce them.

Pests as well as pleasures, however, usually come with the good things that June brings us in the garden, the increasing warm weather causing greater activity amongst injurious insects and similar pests. Constant and close watchfulness, and an

early application of the remedies and preventives recommended in the formulas published in horticultural journals, is very necessary to successfully combat these ever increasing enemies to plant life. The old maxim that "Prevention is better than cure," may be applied with as much force now as it ever was, especially in the garden; not only to the attacks of injurious insects and similar pests, but also to the successive crops of weeds that appear so rapidly during the summer months.

THE GREENHOUSE: June is the moving-out month in this department; as most of the plants that have occupied the greenhouse all the winter and spring, have to be gradually introduced, as the weather permits, to their summer quarters.

Geraniums and the hardier class of bedding plants, such as verbenas, petunias, and pyrethrum should be planted out in the beds or borders as early as possible. Coleus, achryanthes, and the more tender plants may be planted out after all danger of frost is over.

Palms, cordylines, *Ficus elastica* and most hardwooded plants can be stood outside; plunge the pots in, or stand them on coal

ashes if possible, in a partially shaded position; they will require much less attention, and do better than if left in the greenhouse.

Azaleas may be stood out, or plunged outside in ashes; too much shade is not good for them, syringe daily, and keep the roots moist, but not soddened with water.

Young plants of abutilons, *Aloysia citrodora* and similar plants raised from cuttings should be potted in rich soil, and plunged outside in the open and given plenty of water. Old plants of abutilons are seldom a success as pot plants, they do better planted out permanently in the greenhouse. Carnations should be planted out at once. Chrysanthemums that are to be grown outside should be in their flowering pots by this time, and plunged out in the open; pinching back, staking and tying, will have to be attended to as required; give them plenty of water. If single stemmed specimens of these are required, the pinching process must be omitted; these will succeed best in the greenhouse; they require a great deal of attention when grown inside, with plenty of air and water, and syringing often.

Winter flowering begonias are best stood outside in a shaded position during July and August.

Stevias and eupatoriums should be potted liberally, as they require lots of root room, plunge them out in the open and give them plenty of water when established in the pots.

Seedling primulas and cyclamen can be kept in the greenhouse or in a cold frame, shade well, give air and water as required. Old plants or corms of cyclamen will do best out in the frame, in a cool shaded position, give them very little water during summer.

Tuberous begonias will do better and continue in flower longer in a frame outside, keep the sash over them, shade fairly well, and give plenty of air night and day, water well at the roots only; these plants may be



FIG. 1827. POLYANTHUS PRIMROSE.

plunged outside in a shaded position during summer.

Gloxinias, gesneras and achimenes, are best left in the greenhouse, water them well at the roots until they have done flowering, when water can be gradually withheld.

If early cinerarias and calceolarias are required for next winter's flowering, seed may be sown about the end of June, in pots or shallow boxes in light soil; put the pots or boxes out in a frame in a cool shaded place; sprinkle some tobacco dust or tobacco stems, around and under the pots, renew the stems every week or two, this will keep down green fly; water the seed carefully and often; the sash must be kept over them, but give plenty of air by tilting the sash. (See Fig. 1829.)

Put a few *Ficus elastica* cuttings in the cutting bed, they will make nice plants if grown on in pots until winter.

Genistas should be pruned into shape, repotted and plunged outside, or planted out in the open border.



FIG. 1828. SWAINSONIA GALEGIFOLIA ALBA.

Pot roses for winter flowering should be stood outside in partial shade, and given only sufficient water to keep the soil barely moist, so as to induce a period of partial rest.

Fancy pelargoniums that have done flowering can be treated the same as the pot roses; a few cuttings of pelargoniums may be put in the cutting bed to grow on for next season, young plants of these give the finest blooms.

Pot a few geraniums and grow on as recommended in last month's journal.

Fuchsias require plenty of shade, air and moisture; syringe often.

Swainsonia galegifolia alba is a pretty and useful plant for winter and spring flowering in the greenhouse, it requires rich, loamy soil, plenty of light, but very little hot sun; it succeeds well planted out in a border in the greenhouse, or on a bench.

The cuttings of this plant are not easy to strike, they require a close, moist heat to be successful with them. (See fig. 1828.)

Ferns require plenty of shade and moisture. Keep the floors of the greenhouse well dampened, especially for exotic ferns, this is better for them than syringing.

Watering can be done in the evening as the weather gets warmer.

Renew the shading if required. Ventilate freely. The top ventilators may be left open on very warm nights.

WINDOW PLANTS: Palms, cordylines, Ficus and similar plants will do best stood outside in a partially shaded place. Repot them if necessary. Plant out geraniums and all border plants not needed for next winter's use in the window. Cactus will do best stood outside after flowering, a little shade at midday will benefit them, they must not be over watered during summer. Rex and summer flowering begonias, oxalis, cyperus (umbrella plant), ivy-leaved geraniums, far-fugium grande, and a few native ferns in pots will help to keep the window bright and attractive in the hot weather. Syringe the plants, except the Rex begonia, as often as convenient every two or three days at least. Watch out for green fly and red spider, especially the latter. Window boxes, in positions not exposed to the sun at midday, look very pretty in summer. Cordylines, palms, strong growing geraniums, and coleus do well for the centre of these; for the edges of the box use lobelia, cuphea, othonna crassifolia, variegated or green tradescantia, variegated vincas, nasturtiums, double white allysum, ivy-leaved and Madame Salleroy geraniums and perhaps a few single petunias; these, if tastefully arranged and planted in rich loamy soil, and given plenty of water when the plants are established, will make a gorgeous display for the window during summer and early autumn.

FLOWER GARDEN: Planting the flower beds



FIG 1829. CINERARIA; 3 ft. high; and had 400 flowers at one time.

and borders will occupy the early part of June; leave coleus, cannas, and *Caladium esculentum* until the last.

Dahlias, if not already planted, should be put out at once; light soil and an abundance of water agrees well with dahlias.

Mowing lawns, hoeing weeds, staking and tying plants, must be constantly attended to.

Many of the flowering shrubs will be in their full beauty now; by judiciously thinning out the most prominent sprays or spikes of bloom, a supply of cut flowers may be

secured for the house, as well as give the plant all the pruning it may possibly require. Care must be taken when cutting these shrubs not to thin out too much in any one place. Perennials will keep the garden looking gay until the very hot weather sets in. *Antirrhinums* and *Gaillardia grandiflora*, will continue flowering during July and August, if kept well watered.

Phlox drummondii, delphiniums, coreopsis, cornflower, zinnias, stocks, and other annuals, will brighten up the garden until the asters come in later on.

If there is a dry, sandy spot, fully exposed to the sun, where nothing is supposed to grow, fork up the soil and rake it fine; then sow some portulacca seed on it broadcast, cover the seeds very lightly, it will probably be the brightest spot in your garden during the hot days of July and August.

Polyanthus primroses and cowslips should be divided up and transplanted as soon as they are out of flower; these plants that are such favorites in English gardens are quite hardy in this part of Ontario, and make very pretty border plants; they grow readily from seed. Fig. 1827.

FRUIT GARDEN: Gooseberry and currant bushes will still require watching to keep down the caterpillars; a little dry hellebore applied carefully where needed is the safest remedy, now the fruit is so far advanced.

Spray apple, pear, peach and plum trees

with Bordeaux mixture, when the blossoms have fallen. Plums often suffer from attacks of curculio, shaking these pests into a sheet spread under the tree, and then destroying them, seems an effectual method of disposing of these destructive insects. Grape vines should be gone over and the shoots pinched off about two joints above the small bunches of grapes; this should be done just before or immediately after the grapes are in bloom.

Strawberries, and later on, raspberries, will be welcome delicacies at the table. Thin out the fruit of gooseberries and currants if heavily cropped, it will help the fruit left on the bushes, as well as relieve the anxiety of the housewife in supplying the table, when, as a rule, empty preserve jars are more plentiful than full ones.

VEGETABLE GARDEN: Early peas and spinach will soon be plentiful. Spinach is not as generally appreciated as it deserves, as it is a most healthful vegetable, easily grown and very productive, it should be sown very early in the season, late sowings are as a rule valueless.

Asparagus should not be cut after the middle of June, keep down the weeds on the beds, and let it grow until fall; you will have better asparagus than by cutting it late in the season for table, very late cutting weakens the crowns for next year's supply.

Plant winter and savoy cabbage about the 20th, or as soon after as possible. Cabbage

worms will soon be troublesome, several remedies for these are recommended. Persian insect powder (Pyrethum) mixed with equal quantities of fine air-slacked lime, as recommended in March, 1898, No. of Horticulturist, I have found to be very effective; the great difficulty is to get the powder fresh and strong. For cut worms get a pointed stick and search just under the surface of the soil, near where it is carrying on its work of destruction, or it can be caught on the plants at night with the aid of a lantern. Plant out leeks as soon as the plants are large enough, treat the same as for celery.

Plant corn, melon, cucumber, vegetable marrow and squash seeds, the two last named may be planted here and there in the corn hills.

Plant out tomato plants, the cut worm is very partial to these.

Sow a few chinese, rose and the white variety of radish for summer use. Radish seed, of early varieties, may be sown with white turnips, the black fly prefers the radish to the turnip; this method may save your crop of turnips, as well as perhaps give you a few nice radishes for a relish in hot weather. Keep the hoe busy, "a stroke in time will destroy more than nine." Surface stirring of the soil in very dry weather helps the crops very materially.

HORTUS.

Hamilton.

TAMARISK AFRICANA.



HIS pretty June flowering shrub has a decidedly beautiful and unique appearance on a lawn, being so different in its habit of growth to any of our early flowering shrubs. Its long spikes of delicate pale pink flowers so densely produced have earned for it the fairy-like and

very appropriate title of the "Pink Mist Tree."

It is quite hardy in most localities in Southern Ontario; several fine specimens of it can be seen growing on lawns in and around Hamilton, one or two of which have flourished for nearly half a century, without



FIG. 1830.

SPRAYS OF AFRICAN TAMARIKS.

any protection whatever in winter. It requires to be pressed back rather severely at times, as its long, slender growth has a tendency to mount upwards, the plant often attaining a height of ten or twelve feet, if not checked in its towering career. But under any condition it is a very pretty shrub, and no collection of flowering shrubs should be without a specimen of the lovely "Pink Mist Tree."

The accompanying photo will give some idea of its heathery-like spikes of flowers and habit of growth; but no photograph could possibly do full justice to the beautiful effect that a large specimen of this plant has, when covered with its minute delicate pink flowers.

The *Tamarisk Chinensis*, that flowers in September, is also a very pretty shrub, with flowers of a deeper rose color than the African variety. Neither of these shrubs are as common on lawns as they deserve to be, as they grow and flourish in any fairly good soil, and require very little care and attention.

HORTUS.

HYBRID PERPETUAL ROSES.

OF the artistic merits of Roses of this strain, and their hardy excellent qualities, a true lover of the Rose never tires.

When the M. Victor Verdier came to us in 1863 it created a sensation, and it has stood the test of time nobly. Henry B. Ellwnger was famous for his select collections, and in his day prized the following as the most highly scented of the hybrids:

General Jacqueminot, Rev. J. B. Camm, Baron Prevost, Maurice Bernardin, and M. Victor Verdier. Perhaps "a flower by any other name would smell as sweet," but would it be as lovely?

But his list of the best dozen hardy sorts

we consider eminently superior, and every plot of ground should have just those varieties.

BEST DOZEN.

Anne de Diesbach, Alfred Colomb, Baroness Rothschild, Baron de Bonstetten, Fisher Holmes, Eugene Verdier, Marshall P. Wilder, John Hopper, Gen. Jacqueminot, Paul Neyron, Mad. Gabriel Luizet, Caroline de Sansel, Francis Michelin.

A good baker's dozen with proper protection; a foot of stable manure and a few boughs to hold the snow would be essential or prudent in states like Vermont and Canada. Although so many years have passed, these same

roses can not receive many additions. The French Rose, *La France*, of 1889, is one of the best now, and the crimson and yellow and white *Ramblers*—decided acquisitions in the list of climbers—doubtless will continue to increase in variety, and at length become fragrant. *Clothilde Soupert* is a glorious rose, and should be added to the above list, as also the *Dinsmore*. The *Soupert* now has two daughters—yellow and white. They are always in bloom, as is the *Dinsmore*, and are fine for out-door and in. *Mabel Morrison* is also a fine rose. If one can prolong the list add *Maria Rhoda*, crimson; *Eugene Verdier*, silver pink, *Baron Prevost*, rose; *Louis Van Houtti*, crimson-maroon; *La France*, rose and white; Many of these, the ever lamented *James Vick*, furnished me years ago, all proving true to his recommendation, and yet embalm his memory.

I love a rose for its fragrance, therefore the *Polyantha* roses have little charm for me. They stand the winters very well, and are a pretty house plant. *Pearl d'Or* and *Cecilia Bruner*, and *Little Gem*, are all I have been introduced to as yet. I say introduced, for when I see a lovely new rose for the first time, I am as delighted as if they were human.

The crossing of roses, and the grafting together of various sorts, make a new chapter in roses that has no end. Progression is now thoroughly stamped upon the florist,

and I am never surprised, but delighted, at their success. I look every year for new wonders, and always find something. Success to all in this heavenly enterprise, which no bad man ever follows as a trade, and which I hope to find glorified in the great hereafter.

The French Hybrid *Remontan*, or perpetual hybrid, will bear a second time if the flowers are cut off. The eyes next to the top will start and give a second flowering, making you rejoice as when a loved one is restored to health. A few tea roses lengthen the season if you have not the *Soupert* and *Dinsmore*. The two *Perrles de Garden*, *Metior*, Hybrid Tea, *Mad. Lombard*, *Child's Jewel*, the *Rainbow* and *Maria Von Houtti* and *Sunset* are desirable.

The Moss Roses are superbly lovely. The pure white *Blanche Moreau*, *Henry Martin* rose, and the new bright crimson scarlet *Princess Adelaide*, are well worth the dollar paid for them the first bearing season.

It seems one could go on and on about these entrancing flowers and never find a stopping-place.

Give your children a birthday rose of some hybrid sort, and see that they are replaced if ought happens to them, it will give lasting pleasure and infuse the love of flowers.

M. AGATHA HOSKINS.

Newport, Vt.

CLOTHES MOTH.—Prof. L. O. Howard, the U. S. Government Entomologist, reports the use of bisulphide of carbon against clothes moths. The clothes are stored away in a wooden chest. In the cover of the chest is a large auger hole with a sponge

tied immediately below it. In midsummer a few drops of bisulphide of carbon are poured through the auger hole on the sponge, and the hole is then closed with a cork; the fumes being heavier than air, sink down into the chest and destroy every living thing.



FIG. 1931. QUEEN CACTUS, IN YARD OF PHILIP MORSE, SAN DIEGO, CALIFORNIA.
(Nearly 15 feet high and 12 feet broad. The largest cultivated specimen in the world.)

THE CACTUS FAMILY.

ONLY those who have engaged in the cultivation of Cacti understand the fascination these curious spring plants have for the collector. There are the same conditions which make the pleasure in gathering together large collections of rare coins, stamps, shells and curios of all kinds—namely, difficulty of procuring the best and rarest of the particular class you are in search of. The “Cacti Crank,” as he is called, has a large advantage over collectors of most of the classes mentioned, in that his plants are constantly changing, growing larger and more valuable; rewarding patience with their beautiful bloom, and constituting a continual source of pleasure in their care and their capabilities of creating wonderful combinations by grafting, etc.

A great many people discard the Cacti on account of their slow growth and their inability to get them to bloom readily, but if the growth of a cactus is not so fast as that of a geranium it is sure, and what it makes one year it keeps and adds to the next, while the fast-growing plants are thrown out every

year and new ones purchased. The few plants of Cacti which are kept year after year thrive on their neglectful treatment and soon become an ornament, even when not in bloom. Everyone acknowledges that the flowers of the Cacti are among the finest in nature, and they richly reward the fortunate possessor of the plant, even if one has to wait an entire year for it.

But it is not the grand flowers they produce that is the incentive to the collector, but the multitudinous variety of forms and spines that are contained in the various headings under the name of Cacti. It could not be the bloom that creates the desire in a beginner's mind for more of the odd plants, because few of them have seen the lovely flowers, and the few small plants first obtained have not yet reached that period, but the fact remains that the “cactus fever” is contracted by making a small beginning, and then only the possession of more new varieties will satisfy the craving.

As each addition is made to the collection, it is carefully potted and watched till growth

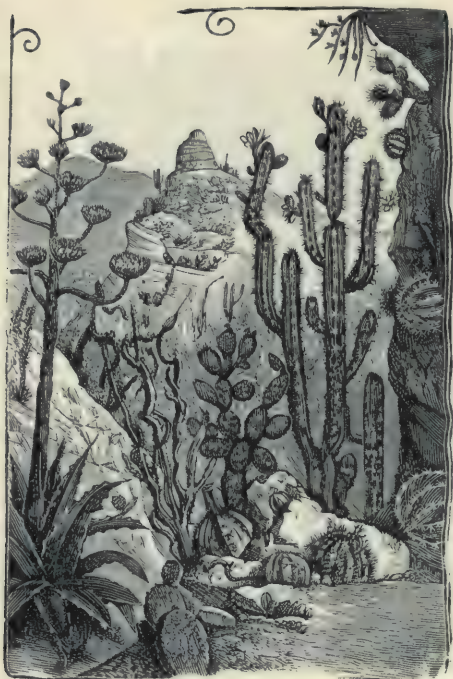


FIG. 1832. CACTI.

appears, when it is usually safely established, and very likely some new oddity of spine on the new plant is so very different from anything yet obtained, that the desire for new ones is greater than ever, if it were only to

see what new variance is possible. The number of Cacti lovers is growing very fast, and there is quite a demand for new varieties. In some places where there are a number of fanciers, they run around from one house to the other, where there is always something new to show, either new arrivals or some rare specimen that is just in bloom. In Woodstock there are a dozen or more who have quite extensive collections, and they are a source of mutual pleasure which often brings their owners together.

To tell of the numerous families of Cacti would take too much space for one letter, but I will later on, if allowed space, try and give a short general description of some of them, in the hope of awakening a still greater interest in the strange genius. I would like to have the names of all the cactus collectors in Canada, for mutual benefit. In Woodstock the collectors have had a number of classes made for their plants, and added to the list of the Agricultural Society's fall show. They also have a large space at the annual exhibition of the Horticultural Society.

J. H. CALLANDAR.

Woodstock, Ont.

SWEET PEAS.

To grow Sweet Peas successfully the following rules should be observed:

Sweet peas should not be planted on the same ground after culinary peas.

Excessive manuring with stable manure in the row immediately before sowing the seed is not desirable. Ground intended for sweet peas if not left in good condition after taking the last crop will be better for manuring the previous fall rather than at the spring seeding.

The use of artificial fertilizers, the so-called "phosphates," bone meal, nitrate of soda,

etc., can be made in spring at the time of planting or soon after.

Thin sowing, by which is meant planting the seeds from four to six inches apart, is conducive to vigor and strength of the plants which come later into bloom, but continue much longer than plants from thick seeding.

Frequent stirring of the soil with hoe or cultivator in dry weather, thus producing a dust mulch, is preferable to artificial watering, unless irrigating facilities afford opportunities for a regular and abundant supply of water.—*Vick's Magazine*.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 30th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc., but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE UNITED STATES will make a fine apple exhibit at Paris. About 2500 barrels of apples have been sent forward, all the samples double wrapped, first with parchment butter paper, then with regular fruit wrappers, made of Manilla tissue.

PEACHES IN GEORGIA.—The Hale peach orchard in Georgia has about 300,000 trees; one block of 60,000 Elbertas is the heaviest loaded of all. Mr. Hale estimates that 8000 car loads of peaches will be shipped out of Georgia this year.

GRAPES.—The Dominion Government will not undertake the export of Canadian grapes, but the Hon. John Dryden has given us some assurance that he will forward several car loads during the season purely for experiment.

MR. WALTER STARK, English manager of the Imperial Produce Co., at Liverpool, who

made a success of the export of our dairy products, called on the 12th ult. He showed us a new patent glass jar for our cherries, peaches and plums, which he thought would be the right thing to use in packing for the English market. The processing would be exceedingly simple, and the goods properly put up and labelled would take the precedence of tin packages at once.

THE YORK IMPERIAL apple, which has been so highly spoken of in some journals recently as a good export apple, is hardly criticised by Bell in R. N. Y. in the following terms:

York Imperial seems to be more sensitive to curculio and other insects causing deformities in the fruit, than any other apple we have. There were no perfect specimens among them, while the Springdale apples, not far from them, were nearly all smooth. York Imperial seems to have a very tender thin skin, very much subject to scald too. We do not care for it either as dessert or cooking apple, the flavor is not to our taste.

COLD STORAGE TEMPERATURES for keeping fruit have been carefully tested at Dartford, England, and a few interesting points determined. Strawberries, currants and cherries, were all put in three compartments, so as to test the effect of temperatures between 26° and 40°. The best results seemed to result from a temperature of about 30°, at which point even strawberries were kept in good condition for three weeks, and cherries for a month, after which they began to wrinkle. To protect the fruit from the drying currents of air a covering was necessary, and paper and wool were tried. It was found that the fruit packed in the latter material were fresher and clearer than in paper.

EXPORT OF TENDER FRUIT.—Our committee has interviewed the Hon. Sidney Fisher with considerable encouragement. Mr. D. J. McKinnon, the chairman, reports that they were most cordially received; that the minister was most anxious to meet our wishes, and would endeavor to arrange with the steamship companies to guarantee certain limits of temperature, say between 34° and 38°, and failing in this to be liable for the damage so caused; that the fruits would be most carefully inspected at Montreal, and that two men who were well posted in Canadian fruit would be sent over to look after our interests.

COMPETITION IN HIGH GRADE APPLES.—Mr. A. S. Baker, of London, England, gave an interesting address before the Eastern New York Fruit Growers on the apple business. He said that the English apple market was supplied by the United States, Canada and Tasmania, and since the latter came at a time when the market was practically free of apples Canada and the United States were the only competing shippers. These American apples were the finest in the world, but brought the poorest prices simply because of the slip shod methods of packing.

They were not graded or sized, packed in barrels, and often poor stock was faced with first class; when such could be sold, it was dumped, and the whole sold at the price of seconds. This, he said, accounted for the low prices our apples brought in the English markets. The Tasmanian apples are shipped nearly 14,000 miles, through the hot climate of the equatorial region, and reach London rather dried up. Their flavor is not as good as the American apples. Yet they sell for better prices in the London market than the American apples. The Tasmanian apples are not barreled, but put in boxes 22 inches long by 11½ inches wide, and 10¼ inches high, outside measurement. They are carefully inspected and labeled, and sell on the strength of the label in the London market without inspection. Englishmen have a great respect for associations, and the stamp of a society or company would be much more quickly recognized than that of an individual. If shipped in boxes he advised putting a sheet of paper between each layer of apples. As varieties for the London market he recommended Baldwin, Ben Davis, Newton Pippin, Northern Spy, Greening, Russet and Jonathan.

APPLE GRADING AND INSPECTION QUEBEC FRUIT GROWERS.—The report of Committee on Resolution of the Quebec Fruit Growers' Association, with reference to the grading and inspection of fruits, makes the following recommendations:

1. That three grades for quality are sufficient.
2. That grade should be marked plainly on outside of all packages for export.
3. Grade marks to be uniform throughout the Dominion, and such as can be easily understood—

XXX	Highest quality.
XX	Second “
X	Third “
4. Fruit packed in standard cases, viz.,

half bushel or bushel cases, should have, in addition to the grade mark, the net weight or number of specimens of fruit contained in the packages.

5. Regular fruit shippers to be allowed to have a registered number or mark recorded at Ottawa, similar to the cheese factories.

6. Brand on outside of fruit package—

1 (c) Canada or Canadian.

2 (b) Variety of fruit.

3 (a) Grade of fruit.

4 (d) In boxes number of specimens or net weight.

5 Name or private mark of shipper.

7. Fruit inspectors to be appointed, who will have authority to open any package bearing a grade mark, and if the contents be not up to grade, the parties concerned to be prosecuted.

(Signed), J. M. FISH,
A. BRODIE,
R. W. SHEPHERD,

Committee.

Adopted at the annual meeting of the Pomological and Fruit Growing Society of the Province of Quebec, held on the 21st February, 1900.

W. W. DUNLOP,

Sec.-Treas.

OUR REPORT FOR 1899.—The following notice of our last report has just been given in the Mail Empire :

The Provincial Department of Agriculture has just issued the 31st annual report of the Fruit-Growers' Association of Ontario, for the year 1899, which will be found valuable by orchardists. It contains the proceedings of the annual meeting of the association, including many papers on a variety of horticultural topics, embodying the experience of some of the leading fruit-growers and practical scientists. Among those whose contributions appear are W. A. Whitney, E. C. Beman, A. H. Pettit, G. T. Powell, Dr. Harrison, Professor H. L. Hutt, Professor W. T. Macoun and Professor J. W. Robertson. The paper of the latter on "Commerce in Large Fruits" has a special interest in view of the attention now being directed to opening up a remunerative export trade in Canadian food products a subject of which the writer is specially qualified by his experience to treat. The principal difficulty in establishing this trade on a permanent and satisfactory basis has been the variable

and sometimes inferior quality and condition of the shipments owing to carelessness in packing and poor transportation. Professor Robertson reiterates the lesson that to hold the market and do a profitable trade it is absolutely necessary to have uniformly good fruit alike throughout the package, in sound condition, with good keeping qualities for the general consumer, and superior qualities for the class who are willing to pay extra for such. He gave an account of the results of trial shipments of pears, peaches and apples made by the Dominion Department of Agriculture, the experience gained affording many practical suggestions to fruit-growers and shippers. Mr. Pettit, in a paper on the same subject, urged the appointment of Government fruit inspectors to examine fruit destined for the British market, and the establishment of standards of excellence, in accordance with which the shipment should be classified as a guarantee of quality to the purchaser.

The subject of spraying was also fully considered, W. M. Orr, President of the Association, furnishing the details of extensive spraying experiments made under the direction of the Ontario Department of Agriculture at various points in the Province, and Professor Macoun presented the results of similar operations at the Ottawa Central farm. Experiments are now in progress at the farm to determine if possible the best time to whitewash the trees, so as to secure the best results. It is proposed to test this application as a remedy for the San Jose scale.

Dr. William Saunders' address on the market afforded by Manitoba and the North-West for Ontario fruit products, indicates the probability of building up an extensive trade in that quarter. Last season over 200 carloads of grapes were successfully shipped to the North-West, and a larger quantity could have been disposed of. Advice was given to fruit-growers to endeavor to secure this market. The report ought to be studied by all interested in the production or shipment of fruit, as it will be seen from the above partial summary of its contents that it comprises much practical information.

THE NOXIOUS INSECTS ACT.—In response to the request of our Association, through its Committee on the Codling Moth, the Ontario Legislature has recently passed the following Act :

1. This Act shall be known as *The Noxious Insect Act*.

2. The following provisions of this Act shall come into force and take effect as to every municipality the council of which shall by by-law declare this Act to be in force therein. The council may at any time repeal such by-law, and thereafter this Act and any regulations made thereunder shall cease to apply or be in force as to such municipality.

3. Upon the recommendation of the Minister of Agriculture the Lieutenant-Governor in Council may make such regulations for the prevention and destruction of insects injurious to trees,

shrubs and other plants as may be deemed advisable. Such regulations shall come into effect and have the force of law after publication in two successive issues of *The Ontario Gazette*.

4. Every municipal council adopting this Act shall in and by the by-law adopting the same appoint one or more inspectors whose duties it shall be to inspect all orchards and to enforce the provisions of this Act and the regulations made thereunder, and to report upon the same to the council.

5. In case the occupant or the owner of any lot neglects or refuses to comply with this Act or with any regulations made thereunder, the Inspector may cause the necessary work to be done, and shall within ten days make a report in writing to the Council stating the amount of the cost thereof, and the Council may thereupon direct that this amount or such part thereof as may appear to them equitable, shall be entered upon the collector's roll against such owner and shall be collected in the same manner as other taxes.

6. Immediately upon the passing of a by-law by any municipal council for bringing this Act into force, the said council shall cause to be delivered to the occupant or owner of every lot affected, a printed copy of this Act and of the regulations made thereunder, together with a copy of the by-law and the name and address of the Inspector appointed to enforce the Act.

7. Any person interfering with the Inspector, or attempting to hinder or prevent him in the enforcing of this Act, shall, upon conviction thereof, before any of Her Majesty's Justices of the Peace, be subject to a fine of not less than one dollar nor more than twenty dollars, and in default of payment of the same to be imprisoned in the common jail for the period of not less than ten days, nor more than twenty days.

ERRATA.—On page 213, Fig. 1820, shows Night Blooming Cereus, by mistake, credited to R. Jennings, should read "grown by W. C. Young," who also photographed the picture.

BLACK KNOT OF THE PLUM and rotting of the fruit have been found to be amenable to regular and thorough spraying in the orchards of the Hatch Experimental Station, Mass., with the result that most of the fruit has been saved, and the black knots few. Our native plum trees are reported

curculio proof, many of the varieties immensely productive; the fruit buds never winter killed; fruit not injured by brown rot; though inferior to the best European and Japanese, some varieties are of good quality and especially valuable for cooking; the trees not subject to black knot, but they are sometimes attacked by leaf-curl and the plum-pocket fungus.

D. W. BEADLE.

307 Given's St., Toronto.

THE SAN JOSE SCALE ACT has been amended by the Ontario Legislature so as to permit of the treatment of the infested trees under regulations made by Order-in-Council. This is also in compliance with the recommendations of our committee, in view of the excellent results obtained by the use of whale oil soap for the destruction of the Scale. The following is a copy of an Order-in-Council approved by His Honor the Lieutenant Governor, the 25th day of April, A. D., 1900:

Upon the recommendation of the Honorable the Minister of Agriculture, the Committee of Council advise that for the purpose of preventing the further spread of the San Jose Scale, the Department of Agriculture be authorized under the San Jose Act, 1900, to furnish owners of Scale infested orchards that are adjacent to such infestation, with whale oil soap suitable for spraying in barrel lots, at one half its cost, including freight, (being one and three-fourths cents per pound) on the following conditions, namely, that applicants agree:

1. To properly prune and prepare their trees for treatment.
2. To apply the soap under instructions to be given by the inspector in charge.
3. To make application to the Chief Inspector or such other person as may be named by the Department, stating the number and kind of trees to be treated.
4. To prepay the cost of the soap as per terms above stated.



QUESTION DRAWER.

Wheat in the Orchard.

1153. SIR,—A neighbor of mine who set out some apple trees three or four years ago, sowed wheat in the same field last year and now three-fourths of his trees are dead.

He attributes the loss of his trees to the wheat being around them. He also tells me that his brother-in-law sowed wheat in his orchard and some of his trees also died, and his neighbors told him that he would lose all his trees if he continued the practice.

Now is it known that wheat takes such an effect upon fruit trees, or has there been any such case brought before the notice of the Fruit Growers' Association before? Kindly reply through Canadian Horticulturist and oblige.—Yours respectfully,

Cobourg.

J. J. GORMLY.

The growing of wheat, oats or barley in an orchard is condemned by the best orchardists, because such grain robs the soil of phosphoric acid to an alarming extent, and because of the mechanical action of such crops in robbing the soil of its moisture. The weakened growth resulting seems to leave the trees most susceptible to the borer, and other evils, so that indirectly wheat growing may have caused the death of the trees referred to.

Treatment of Amaryllis.

1154. SIR,—Would you please give in the Horticulturist instructions for treatment of a white Amaryllis. I planted one last September and it has not made root yet. The leaves shot out, then died away. The bulb is large, hard and dry.

A SEAFORTH SUBSCRIBER.

The bulb referred to has probably been watered all the winter, when it should have been resting, or possibly the soil may have become sour for want of proper drainage. I would advise that the bulb be shaken out clean from the soil it is in, and all decayed roots removed. Repot the bulb into a mixture of equal parts of enriched loam and sharp, clean sand; pot into a comparatively small pot, a six-inch pot is large enough for a good sized bulb; use fully an inch of

broken pot at the bottom for drainage. The top of the bulb should be just above the surface of the soil when repotted. A handful of sand placed around the base of the bulb will help it to start root action. Water well once, and plunge the pot in coal ashes out of doors until fall, it will require very little water during summer, and still less in winter. For further treatment of Amaryllis see May number of Horticulturist for 1899.

Hamilton.

W. HUNT.

Dwarf Trees.

1155. SIR,—Can I make dwarf apples by getting one-year-old trees and training them to branch out near the ground?

Newburgh.

J. GAUDIER.

This would not be a proper method of making dwarf apple trees; for, as ordinarily grafted, the growth is too vigorous to be kept back by pruning. Dwarf apples are made by using a dwarf or slow-growing variety of apple, such as the Paradise or Doucin as stock, and in consequence the growth is checked and the tree bears earlier. For the commercial orchard, however, this is not advised in the case of the apple.

Planting Fruit Trees.

1156. SIR,—I intend to plant two or three hundred trees next year. Would it be best to buy in the fall and bury in the ground until spring. Would you recommend one, two or three-year-old trees?

Newburgh.

J. GAUDIER.

It only gives increased labor to buy trees in the fall and bury them until spring, and it is best to buy just when the trees are needed for planting, allowing them to remain out of the ground as little time as possible.

Apple, pear and plum trees are usually planted at three years of age from the graft, while the cherry is better planted at two years from the bud.

The Plum Scale.

1157. SIR,—I enclose you two small pieces of an apple tree from Mr. G. L. Hubbs, Picton, P. O., with scale, or insect, on the bark. A red insect seems to come from the scale, and when the scale is removed it leaves a white spot on the bark. Will you kindly give me any information you can about it?

Picton.

WALTER T. ROSS.

We have frequently had samples of this scale sent into this office, and it is quite common, both in this province and in New York state. It is so large as to be easily fought, either by scraping off and burning, or by spraying with whale oil soap. The following is from our volume for September, 1894, with the accompanying illustration :

This illustration is from a photograph of an infested branch of the Bradshaw plum. On the twig at the left are seen scars showing where some of the scales have been removed. The actual length and width of a full-grown scale is indicated by the cross lines in the illustration. The dimensions are usually about five millimeters by four—that is to say, about seven thirty-seconds by five thirty-seconds of an inch.

At the present writing, June 20th, the scales are filled with a whiteish powder, which, examined with a lens, proves to be composed of eggs. The young lice, which are produced from the eggs in the spring, had already issued from the old scales this season about May 10th, when my attention was first called to the insect. The branches were then covered with a sticky substance like honey-dew, evidently secreted by the young insects. On leaving the old scale they crawl over the branches till, finding a convenient location, they attach themselves to the bark. They seem to prefer a location



FIG. 1833.—BRANCH OF PLUM INFESTED WITH SCALE, *LECANIUM CERASIFEX*.

on the under side of the limbs. At first they whitish, or nearly transparent, but gradually assume the dark reddish brown color of the mature insect.

Mr. L. O. Howard, the United States Entomologist, to whom specimens were submitted for identification, states that it is a somewhat rare species known as *Lecanium cerasifex*. He advocates spraying with dilute kerosene emulsion when the young insects first appear in the spring. The scales are soft and can easily be brushed or scraped from the larger branches.

Whale Oil Soap as a Fertilizer.

CENTRAL EXPERIMENTAL FARM,
OTTAWA, May 14, 1900.

1158. SIR,—I have been asked to reply to the following question through the columns of the *Canadian Horticulturist*: "Can the whale oil soap used in spraying for San Jose scale benefit the tree in any other way than as an insecticide? Many orchardists state definitely that there is a marked effect upon the vigor of the tree, as shown by the color of the foliage and the improved appearance of the fruit, that can scarcely be attributed solely to the insecticidal properties of the soap."

Whale oil soap properly and honestly made will contain from 9 to 12 per cent. potash. This element, as is well known, is a valuable and important constituent of plant food, and especially so for fruit trees. It invigorates the vegetative growth and tends to the production of fruit with high flavor and good appearance.

It is not at all probable that there is any absorption of the potash from the soap spray through the bark or leaves, as some suppose; the potash, in common with other mineral foods, must be absorbed from the soil through the roots. If the potash in the soap is to act as a food to the tree it must follow the same course. It is not difficult to understand how this may readily take place, for sooner or later—probably within two or three weeks after spraying—the rains have washed off the soap and it has been received and absorbed by the soil in the immediate neighborhood of the roots. There it is gradually converted into compounds assimilable by plants.

We may now ask: Is there sufficient potash in the soap solution sprayed on the tree to make its value as a fertilizer worth considering? In making the solution for the San Jose scale, two pounds of soap are used per gallon, and probably two gallons will be required for a well grown, mature tree. Let us suppose there are 35 trees per acre. A simple calculation on the basis of 10 per cent. potash in the soap will show that the soil of each acre of orchard so sprayed receives 14 pounds of potash,

subsequently set free as plant food. This, though not a heavy application, would, in my opinion, be quite sufficient on many soils to produce a marked improvement. The usual dressing of the fertilizer, muriate of potash, is 100 lbs. per acre, equivalent to an application of 50 lbs. actual potash. Spraying with whale oil soap, therefore, it is seen, furnishes an amount of potash somewhat greater than one-fourth of that supplied when using the above named fertilizer in ordinary dressings.

FRANK T. SHUTT, C. E. F., Ottawa.

Violets Not Blooming.

1159. SIR,—Will you kindly tell me through your paper why a bed of "Maria Theresa" violets that I had planted last autumn in a cold frame have not flowered this spring? The plants are perfectly healthy, but no sign of bloom. Aspect southern, and well sheltered.

Toronto.

FLORENCE W. WADSWORTH.

The violets mentioned had not time, after being transplanted last autumn, to make and mature the growth necessary to produce flowers this spring. Allow them to grow on now undisturbed, as their healthy condition gives promise of a good supply of bloom next season. A south aspect is a very trying one for violets during July and August; partial shade, by placing over them some laths or slats of wood an inch or two apart, so as to break the direct rays of the sun and not exclude air and sunshine altogether, would be beneficial to them during the very hot weather. Give water liberally during summer. When necessary, violets should be transplanted as soon as the flowering season is over.

W. HUNT, Hamilton.

The Apple Box vs. the Apple Barrel.

SIR,—I enclose a cutting taken from the *Bridgetown Monitor* of the 18th inst., which may be of interest to you, and I should like to read your comments upon it in the next issue of *The Horticulturist*. The subject is a very important one, and if the facts are as stated by Mr. Baker, the sooner his suggestion is acted upon the better it will be for all concerned. The figures he quotes may be open to question, and I have seen it stated by dealers on the other side that for general use the barrel was the best package to use. What is your experience? Yours truly,

Annapolis, N. S.

E. D. ARNAUD.

Speaking upon American exports recently, at a meeting of the Eastern New York Horticultural Society, held in the city of New York, Mr. A. S. Baker, managing director of the International Cold Storage and Lightering Company, of Southampton, England made the following interesting references to this subject:

"You ask me what do I recommend. I say, abolish the barrel altogether. It will pay. Why? In the first place, you will save 20 per cent. of your freight rates. Now, you know on ships you do not pay for weight; you pay for measurement. The difference in stowing between a box containing one bushel of apples and a barrel is so great that you will save at the very least 20 per cent. cubic measurement, thus reducing your freight bills very considerably. There is another advantage about the box. The apples carry better; they get on to the market in better condition. They

"This same box that I describe, packed with such quality of apples as exist in this country, is uniformly worth on the London market fifteen shillings (\$3.75). Some of you will remember the returns, and say that you only get eleven shillings (2.75) for your barrels. Gentlemen, this is something for you to think over. Which do you want, eleven shillings for your clumsy barrel of apples, or fifteen shillings for your bushel box?"

In our opinion Mr. Baker's views on the great advantages of the apple box are to be taken with considerable allowance. The writer has now been using the bushel apple box for many years for exporting fancy apples to Great Britain, and expects to continue its use for special A No. 1 fruit. Our engraving

shows the box, one of them having cover removed to show the method of packing. Every sample is wrapped in thin manilla paper, assorted in to sizes by Wartman's grader, and each box contains apples of uniform diameter. Thus, 2½-inch apples will go four layers deep, four rows wide and eight apples long, to fill a bushel box of 128 apples.

Now this box is all right for such goods, especially for high-colored Spys, Kings, Cranberry Pippins, or any such fancy varieties; but it would be absurd to pack ordinary stock in these packages—such a course would injure the trade for fancy stock, increase the number of packages to handle, and lessen the net profits.

Many people ride hobbies, and ride them to death; and we are inclined to think Mr. Baker is a little inclined that way. For ourselves, at all events, after using boxes for ten years for export to England, Scotland and Australia, we intend continuing to use the barrel for ordinary stock.

To Kill Tree Roots.

1160. SIR,—What compound or solution of strong and simple nature should I use to permanently eradicate tree roots (Lindens and Maples)? My plants last year were a failure owing to these infested and annoying roots.

Windsor.

R. V. COVENTRY.



FIG. 1834. APPLE BOXES.

are altogether more salable. A box measuring 22 x 11½ to 10½ outside measurement will contain 50 lbs. of apples—or one bushel, English standard. The apples can be all wrapped in paper. There is no danger then of contamination from a bad one. There is another thing I will tell you. Apples, when stored away on board ship, contain a considerable amount of latent heat which manifests itself in the middle of a barrel, and, no matter how honestly you pack the barrel, the middle will never open as bright as the top or bottom, owing to this heating on the way. With a box this need never happen; when the box is properly made, it never does. Those who have to handle freight can handle a small box better, and with more care, than a barrel. The danger of bruising is reduced to a minimum, especially with the use of paper around each apple. You ask then, but will it pay us to go to this extra trouble? That is for yourself to decide.

If your correspondent refers to the superficial roots of living basswood and maple which often run to some considerable distance, and hence disturb other plants, I may say that I know nothing better than digging and cutting them out. There is nothing that will prevent the roots growing so long as the trees are alive. It is part of the nature of the root to send its branches wherever they can find nourishing matter—tood and water.

If the roots are already dead, then again uprooting is the best remedy. Some advocate the use of coal oil or sulphuric acid. These are undoubtedly potent, but the spade and axe remedy is the simplest.

O. A. C., Guelph. W. LOCHHEAD.

Rocky Mountain Cherry.

1161. SIR,—Can you explain why I never get fruit from my Rocky Mountain cherry tree?

Anagance, N. B. C. STOCKTON.

In answer to S. Stockton, Anagance, N. B., I would suggest as the probable cause of the flowers of his Rocky Mountain cherry not setting fruit, that the flowers are not perfect. If he procured some scions from a Rocky Mountain cherry known to be self fertile and grafted them on his trees, he might be able to get some fruit.

C. E. F., Ottawa. W. T. MACOUN.

Exhausted Calcium Carbide as a Fertilizer.

1162. SIR,—Kindly give in your next Horticulturist some information as to the application and value as a fertilizer of exhausted calcium carbide as taken from the generator of an acetylene gas machine?

Hagersville. S. W. HOWARD.

The waste product from the acetylene gas machine is practically slaked lime. If the carbide has been manufactured from lime free from metallic sulphides, as iron pyrites, the by-product from the machine may be adplied directly to the land. As, however, it is apt to contain sulphur compounds (which are injurious to vegetation), it is well to expose it in small heaps on the field for a

few weeks before mixing it with the soil. This exposure corrects and renders harmless the sulphur compounds.

There are very few soils that are not benefited by an occasional application of lime, say 20 to 40 bushels per acre every fourth or fifth year. For those that are peaty, sour or naturally deficient in lime, this waste product should especially prove a valuable amendment.

FRANK T. SHUTT,
Ottawa. Chemist Dom. Exp. Farms.

A Disease of Wax Plants.

SIR,—I send you herewith two leaves taken from a Hoya Carnosa. The plant is very large, covering a frame about 4 ft. x 8 ft., and was, until very lately, quite healthy looking. I would like to know if it is possible to do anything to stop this apparent blight or whatever it is. Have you ever seen leaves of the Hoya affected in the same way? Can you tell me what it is? I thought when I first saw the spots that it had been some drops of water on the leaves and scalded with the sun, but I do not think this is the cause. I send two leaves, on the large one you can see the blight in the first stages, and on the smaller one the affected parts have lost all substance. The plant is standing in a square bay window with an east and south exposure. As I feel anxious about the plant I would like to hear from you at your earliest convenience.

H. B. SPROAT, Woodstock.

The disease affecting the wax-plant (*Hoya carnosa*) leaves is not a common one. It is due to the presence of a fungus called *Alternaria*, a genus allied to *Cercospra* and *Macrosporium*, which affect the tomato and other plants. The mycelium of this fungus lives in the soft cells of the leaves, and spreads with great rapidity. At first the spots are but slightly affected, and resemble the results of sun-scald on drops of water sprinkled on a leaf, but later the area of diseased part widens, and the tissues begin to rot. The margin of the area is very distinct. Cultures of the fungus were made in the laboratory here, and a fine crop of mycelium and upright stalks, bearing conidia, was obtained. Fig. 1835 shows very clearly the form of the threads and the conidia. The latter are flask-shaped, and frequently united

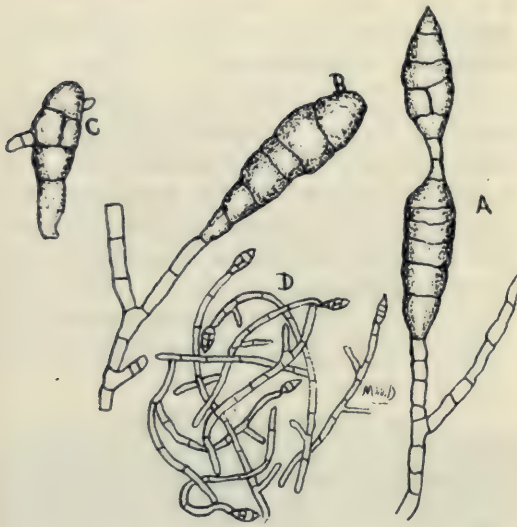


FIG. 1835. FUNGUS AFFECTING HOYA LEAVES.

Alternaria Sp. on leaves of *Hoya*.

A B C, magnified x 450 (camera lucida).

A and B, showing shape of gonidia.

C, a germinating gonidium.

D, gonidiophores—from a pure culture in gelatine.

in chains, as shown at A, and connected by narrow necks. Each conidium is divided by partitions into several cells, and the threads of the mycelium are velvety. The full life-history of this fungus, however, is not well known.

Remedy.—All diseased leaves should be collected and burned, so as to prevent the further spread of the disease. Spraying with a weak solution of Bordeaux Mixture will act as a preventive of further spread.

W. LOCHHEAD.

Biolog. Dept., Ont. Ag. Coll.,

April 11th, 1900.

Open Letters.

Improved Cuban Queen Watermelon.

SIR,—The old Cuban Queen Watermelon has long been recognized as the leading shipping and commercial melon of the country. We have a sport of this melon that far supercedes the old Cuban Queen. The new melon is the admiration and wonder of all who see it, as it is a third larger than the old variety, and for sweetness and delicious flavor it stands unrivalled. In fact melon growers of varied experience pronounce it the greatest watermelon ever grown. Single vines perfect six to eight melons, averaging in weight from 75 to 120 lbs. The seeds of this melon are brown; the flesh the most vivid crimson red, melting and sugary. The vines are rampant, vigorous growers, and very healthy. This is the melon for the millions, as it succeeds on all soils.

We have tried all melons as fast as they originated, and were disseminated. But none equals this new melon.

S. L. WATKINS.

Lotus, Cal., March 21, 1900.

Benson's Hybrid Muskmelon.

SIR,—An entirely distinct and new hybrid melon, claimed to be a cross between a Pomegranate melon and Netted Gem. This rare melon combines the fragrance and beauty of the Pomegranate, and has the size and quality of the Netted Gem. This melon is enormously prolific, good specimens weighing three and four pounds. It is somewhat oblong in shape and very solid. In color it is a rich orange, striped and mottled with

gold. The great value of this melon lies in its preserving qualities, not being excelled by any known melon. The flesh is snow white, quite solid and most deliciously flavored, being quite spicy and aromatic. The preserves made from this source are excellent and quite easily made. For crystalizing, it is one of the finest fruits known. The garden lemon and vegetable peach cannot be compared with it, as it far excels them in all respects.

Lotus, Cal.

S. L. WATKINS.

The Largest Apple in the World.

SIR,—My attention has been drawn to an article in your paper (February number), that a Gloria Mundi apple, exhibited at the Indiana State Fair, and which weighed 23½ ounces, was claimed to be the largest apple in the world, but which I can prove was not.

In the fall of 1899, I bought from Mr. W. G. Watson, of Dixie, among other apples, about ten or twelve bushels of Kentish Fillbaskets, and with a representative of the largest wholesale grocery in Canada, we weighed several of the apples. One, the largest, weighed 25½ ounces, and several weighed over 20 ounces. In fact the whole lot averaged the largest apples I have ever seen. I might also add that my customers unanimously declared them to be excellent cooking apples, and I had numerous enquiries for them long after I had sold out. Yours truly,

Toronto.

E. LUTTRELL.

P. S.—We neglected to measure the circumference.

Our Affiliated Societies.

COBOURG.—Major H. J. Snelgrove has been prominently identified with the Cobourg Horticultural Society since its organization took place in 1897, when he was elected secretary. The success of the society is largely due to such enthusiastic directors as President J. S. Hayden and Secretary Snelgrove, who by their selection of many new varieties of fruits and flowers have made valuable acquisitions to Cobourg's beautiful gardens.

Major Snelgrove is decidedly of the opinion that the most useful function of the Horticultural Society consists in the importation and introduction of new specimens of hardy flora, whose superb merits are comparatively unknown to the majority of our "native born" florists. Here there is a grand field for original exploitation—more especially in the perennial plant and ornamental shrub classes—containing scores of foreign varieties, suitable for Canadian cultivation, whose splendid qualities have only to be propagated to be appreciated by every one.

The Horticultural Society is contributing materially towards making the pretty port of Cobourg "a thing of beauty and a joy forever" to the hundreds of southern visitors who throng its fine "old Ontario strand" during the summer season. Already its handsome streets and leafy avenues, its spacious pleasure grounds and velvety lawns, its faun-enticing parks and gardens, and its amphitheatre of vine-clad hills and orchards, render Cobourg distinguished among the most progressive communities of our beloved Ontario.

In civic life Mr. Snelgrove is governor of the gaol for the united counties of Northumberland and Durham—an extensive and populous municipality. He has received the highest honors and filled the highest seats in the grand bodies of several large fraternal orders, having just completed his term of office as President of the Canadian Fraternal Association—a congress of all the principal beneficent brotherhoods represented in this Dominion.

GRIMSBY.—The most successful floral exhibition ever held by our society took place in the Town



FIG. 1836. H. J. SNELGROVE, MAJOR, Q. M., 40TH BATT.,
SECRETARY COBOURG HORTICULTURAL SOCIETY.

Hall, Grimsby, on the evening of May 11th. A nearby lumber mill put up the tables on Friday morning, and removed them at the close for about \$1. A drayman collected and returned all the plants, getting nearly all to the hall by Friday noon for about \$4, a committee having previously solicited them and labeled them with the owners' name. The committee of arrangements completed their work about 4 o'clock, and the judging was completed about 6 p. m. At 7 o'clock the public was admitted on payment of an entrance fee of 10 cents each. There was an attendance of at least 200 people, which was fine

for a village society. Music was provided during the whole evening by Weaver Bros., with a banjo and piano, for \$4.00. As an encouragement to the exhibitors, a dozen fine plants were given as premiums. It was felt that this was quite in accord with our work and was not open to the same objection that exists against money prizes. Among these were a beautiful hanging basket of lobelia, a fine rubber tree, a fine blooming plant of hydrangea otaksa, a large Kentia palm, etc., etc. During the evening we also had two songs from the Grimsby Male Quartette. At the close of the evening the plant distribution was made, each paid member receiving from the Fruit-Growers' Association a golden prolific plum tree and a wistaria, and from the Grimsby Society a Kentia palm, a Japan ivy and three lily bulbs. The receipts more than covered all expenses, and many persons, seeing the good things given each member, united with our society.

E. H. READ, Secretary.

OUR BOOK TABLE.

THE FARMSTEAD.—Among the many new books relating to the farm that have come to my table during this book-writing year, none appears more attractive, and certainly none bears a more suggestive title than the above. This is written by Isaac Phillips Roberts, Director of the College of Agriculture, Cornell University, New York.

It will be remembered that Prof. Roberts was the first Instructor in Agriculture in the Iowa Agricultural College, and for this reason the book is of special interest to Iowa readers. It is a companion volume to Prof. Roberts' former highly successful work, "The Fertility of the Land," where the management and the tillage of the soil was the central theme.

The Farmstead opens with a strong plea for fuller appreciation of rural homes; country and city life are contrasted and the advantages and disadvantages are set forth impartially. After discussing "The Farm as a Source of Income," "The Educational Opportunity on the Farm," "Selection and Purchase of Farms," the very practical questions of "Laying Out the Grounds," "Building the House," "Finishing and Furnishing the House" are all taken up and discussed in detail. This part is valuable on account of the practical knowledge and long experience as a builder and trained carpenter of the writer. A well written chapter is that entitled "Household Administration, Economy and Comfort," by Prof. Mary Roberts Smith, Prof. Roberts' daughter. "The Home Yard" is written by Prof. Bailey in his usual suggestive and attractive style. The barn, outbuildings, fences, cisterns are all treated under separate heads and in an exhaustive manner.

The volume will be found full of information upon many points upon which at present we do not seem well supplied with books and reference. It forms a part of the Rural Science Series published by the MacMillan Company, New York, and is retailed at \$1.25. JOHN CRAIG, Iowa Agricultural College, Ames, Iowa.

The wise and active conquer difficulties by daring to attempt them; sloth and folly siver and shrink at sight of toil and hazard, and make the impossibility they fear.

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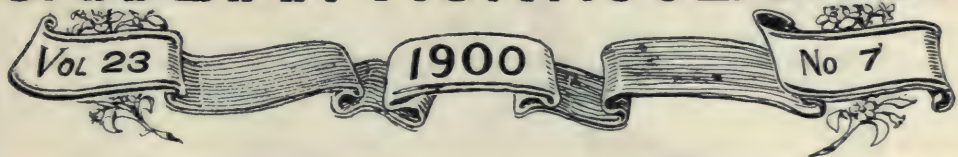




Photo by Miss Brodie

FIG. 1836. THE KITTATINNY BLACKBERRY.

THE CANADIAN HORTICULTURIST



** JULY **

THE KITTATINNY BLACKBERRY.

SOON after its first introduction the writer had a plantation of Kittatinny blackberries at Grimsby, Ontario. The old Lawton had been the commercial variety there for many years, the first plantation of that variety having been made away back in the sixties by Mr. Chas. Woolverton, but it quickly gave place to this new introduction. How little we knew about blackberry cultivation in those days, when, instead of pruning the top into reasonable form, we tried a trellis to keep up the branches, and nevertheless the projecting limbs caused sore punishment to man and horse when working among them. The Lawton was a pretty good market berry, but though it turned black enough to sell on the market, its hard core never seemed to be ripe enough for eating.

It was indeed an agreeable change to grow the Kittatinny with its large shiny black berries, ripe through and through, and most excellent, either for eating fresh, or with cream and sugar at table, or in pies. It was early in the eighties when we first began shipping this variety into Toronto, where it was handled for us by Mrs. Bilton who kept a high-class fruit and game store

and who sometimes sold it as high as 23 cents a quart. Those were the palmy days of fruit growing, when grapes brought 8 to 10 cents a pound, and currants about the same, and yet no one of us seemed to think it worth while to extend our plantations. Now the blackberry brings only from 6 to 10 cents a quart, and we are planting by the acre.

When the peach fails the blackberry is in great demand, for it is of the same season, and the thrifty fruit grower will try to be prepared for such an emergency. It is useless, however, to plant Kittatinny plants too freely outside the peach belt, for it is not very hardy. Better success will be had with the Synder, which is very hardy, enduring even the climate of Algoma, and producing wonderful crops in the Muskoka district, although it is neither so large, nor so beautiful as the Kittatinny.

The orange rust is a serious disease affecting the latter while, strange to say, we have never yet seen it upon other varieties of blackberries, no doubt because their foliage is more vigorous and more resistant to attack. This rust (*cœoma nitens*) is exceedingly difficult to destroy because it

lives through the winter on the underground stems, and while the spores may be killed with Bordeaux the vegetative portion is out of its reach. The accompanying engraving shows a section of an affected leaf, *a a* the epidermis of the lower side ruptured by it and exposing to view at *b* a mass of golden colored spores, each of which is capable of

Technically we would describe the Kittatinny for Ontario as follows :

ORIGIN—Kittatinny Mountains, N. J. ; found growing wild by a Mr. Woolverton in 1874 ; but not much disseminated until many years later.

PLANT—Very vigorous, but tender outside of the peach belt ; productive ; pro-



FIG. 1837. ORANGE RUST.

conveying the disease to other plants ; *c c* represents haustoria by means of which the fungus draws nourishment from the cells.

In setting blackberries the rows should be not less than eight feet apart, and the plants three feet apart in the row, though if plants are plentiful, they may be set one foot apart in the row. Every spring the last year's fruit canes should be cut back a little to permit cultivating and fruit gathering, while the new growth will grow above and shade the fruit.

pagated by suckers, and by root cuttings ; very susceptible to the Orange Rust.

BERRY—Large, averaging about $1\frac{1}{2}$ inches in length ; oblong, slightly conical ; shiny black when ripe, becoming gradually duller after gathering ; flesh, moderately firm, sweet, rich and excellent.

SEASON—July 25th to August 25th.

QUALITY—Good for dessert ; good for cooking.

VALUE—First-class for home market.



FIG. 1838. IRIS BED AT CENTRAL EXPERIMENTAL FARM, OTTAWA.

CENTRAL EXPERIMENTAL FARM NOTES—IX.

THE weather during the latter part of May was cool and showery up to the 19th, when it became warmer, the temperature being 18°F., 82°F. and 83°F., on the 26th, 27th and 31st. Rain was beginning to be needed by June 1st, but on the 2nd about 1½ inches fell, which did much good. As the weather has continued warm since then, growth has been rapid. The warmest day so far this month was on the 6th, when the temperature was 84°F. No frosts have occurred during the past month.

The blossoming season of apples, plums, pears and cherries was very favorable this year, the weather being bright and warm, as a result of which these fruits, as a rule, set well. There were exceptions, however. Cherries only set fairly well, and there will not be a heavy crop of any of the varieties fruiting here. The severe frosts which occurred here on the 10th and 11th May probably did more injury to the apple and cherry blossoms than was at first supposed. Among the apples, several varieties growing in

sandy soil, but apparently quite healthy, did not set much fruit, although the trees bloomed freely. As records are kept of the approximate amount of blossom on each tree and records of the yields from these trees, also, we hope soon to learn the various causes of their unfruitfulness. It may be from lack of certain plant food ; from some disease, not apparent ; from frost, or from self-sterility, but, there being plenty of opportunity for cross-fertilization where so many varieties are growing in close proximity, the last cause suggested is not likely the true one. The trees of the Wealthy and Duchess are particularly well loaded with fruit this year. The McIntosh Red apple, which is one of the most satisfactory trees to grow in this part of the country, is an annual bearer at the Experimental Farm. It never fruits heavily, but each year there is a medium to good crop of fine apples, which are all the better on account of the tree not over-bearing. The hardiest apples have set fruit best in most cases.

The pears are making good growth this

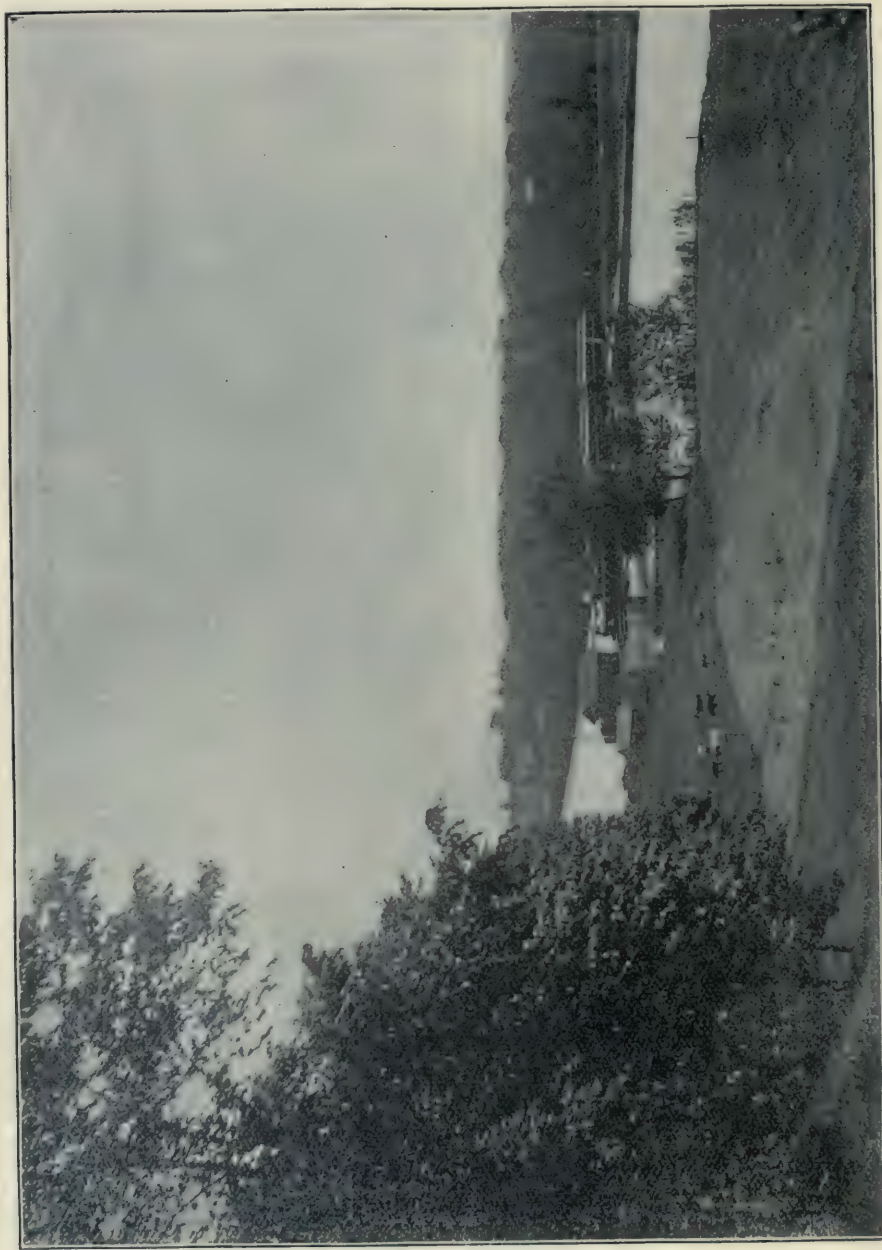


FIG. 1839. VIEW IN ARBORETUM, CENTRAL EXPERIMENTAL FARM, OVERLOOKING RIDEAU CANAL.

year, and quite a number of varieties are fruiting, though most of them are of Russian origin and inferior in quality. A tree of the Flemish Beauty, however, which has been in the orchard for ten years, is bearing this year. It bore, also, two years ago. The pear orchard has been almost free of blight for several seasons.

Plums set well, on the whole, and a good crop of the American varieties is expected. A few European sorts are also bearing this year.

A plentiful crop of strawberries is also anticipated, the rains which we have had recently being especially favorable to that fruit. The Warfield is apparently one of the hardiest varieties of strawberries grown, and, taking everything into consideration, few varieties excel it for a shipping berry. It, however, becomes rather small if more than one crop is taken from a plantation, and being a pistillate variety requires to be fertilized by some other sort. The Glen Mary, which has succeeded well in many parts of Canada, promises to produce a good crop of berries this year. The Wm. Belt, which is an excellent strawberry in many respects, does not appear to be quite hardy enough in all locations here. Both last winter and the winter before, it suffered considerably at the Experimental Farm; its irregular shape also is against it. On the comparatively light soil here, Clyde did not make many runners last year, and the crop from it will not be as large as if it were on heavier soil.

Under the system of treating the orchard at the Central Experimental Farm, the cover crop of common red clover is now ready for cutting the first time. The crop is very heavy, the clover being from 22 to 24 inches in height and just showing flower buds. As mentioned in a previous number of the Horticulturist, the apple, pear and plum orchards have not been cultivated during the past two seasons, nor this year. Most of the soil in the orchards is a light moist sandy loam,

surface of which is easily moved by the wind. Cultivation in these orchards gives the wind an opportunity of blowing the soil, the result being that the roots of the trees are liable to be bared, or nearly so, and the trees are thus more likely to suffer both in winter and summer. Since an almost continuous cover crop has been maintained, the trees are becoming more vigorous. The following plan is adopted: Two-year-old clover is ploughed under in the spring, the land harrowed and clover re-sown without a nurse crop at the rate of 12 lbs. to the acre, after which the land is rolled. During the summer it is cut a couple of times with a field mower to prevent weeds from going to seed, and a cover crop of clover from 10 to 12 inches high is left in the autumn to hold the snow and protect the roots of the trees. The following summer, this same clover is cut from four to five times with a field mower and the crop left to rot on the ground. By cutting the clover each time before it blooms, the vigor is maintained and the fourth crop is usually still a heavy one. In 1898 when the amount of green clover cut was approximated, it was found that more than 25 tons per acre were left to rot on the ground in one season. In 1899 the crops were as good, or better than in 1898, and this year the first crop is better than either in 1898 or 1899. As red clover is a biennial, a large proportion of the plants kill out the second winter, and on this account, partially, it is ploughed under the following spring and re-sown as previously stated. While this system is not recommended to orchardists who may have conditions which would render it unsatisfactory; for instance, where droughts are of common occurrence, or where the soil is dry, it is giving good results under the conditions at the Central Experimental Farm, and will be continued until bad effects are noticed; fertilizers to balance the food supplied by the clover being applied from time to time as deemed necessary.

The German Irises make a fine show during the month of June. A very large collection has been brought together at the Experimental Farm, and they are the delight of all who see them. There are such a large number of varieties of exquisite shades and markings that it is difficult to choose a limited number which would be suitable for a small garden. Among the best, however, are Mad. Chereau, Darius, Gisele, Mrs. H. Darwin, Coquette, Ossian, Walneri, Lord Seymour, Sappho, Prinz Frederic, Marginata, Jacquesiana.

In July and August the annuals are so plentiful that perennials often take second place, but if one has a good collection of Pæonies, Japanese Irises, Lilies and the Hybrid Perennial Phlox, he can have a

good show of flowers. There are other good perennials, however, which bloom in July, among which being the Cashmerian Larkspur, (*Delphinium Cashmirianum*), Showy Fleabane (*Erigeron speciosus*), Infant's-breath (*Gypsophila paniculata*), Autumn flowering Sneezewort, (*Helenium autumnale*), large flowered Chinese Bellflower (*Platycodon grandiflorum*), Caucasian scabious (*Scabiosa Caucasica*), Meadow Sweet (*Spiraea Ulmaria*), Queen of the Prairie (*Spiraea Venusta*), Broad-leaved sea lavender (*Statice latifolia*), Aster, Amellus bessarabicus, and the fine Rudbeckia, Golden Glow, which begins to bloom about the last of the month.

W. T. MACOUN,

Horticulturist.

Central Experimental Farm.



FIG. 1840. LARGE FLOWERED SYRINGA AT C. E. F., OTTAWA.

SHADY NOOKS FOR SUMMER DAYS.

ANYTHING which adds to one's comfort during the warm weather is welcome, and as the life in our climate during the summer months is largely an outdoor one, any bit of shade which Nature or art may provide to temper the rays of the sun is welcomed. The ideas illustrated on this page may all be carried out at slight expense.

The illustrations for crows' nests suggest places where one may retire with a favorite volume. If the climb into these retreats is too venturesome for the older members of the household, they will afford much enjoyment for the younger ones. Of course the proper trees are necessary, and as no two are alike the



FIG. 1841. A LOFTY CROW'S NEST.



FIG. 1842. A SHADY SEAT AT THE TENNIS COURT.

carpenter will have to adapt his construction to the enforced requirements of size and growth.

In the arrangement for the shady seat at the tennis court, rough cedar posts are planted firmly about eight feet apart, three feet below and seven feet above ground, and a framework is built across at the top, and a double seat with back constructed between. The framework at the top should come forward four and a half feet from the end parts on each side, making the top nine feet over all. A series of hoops is carried along one foot apart, giving a curved top. The brackets for this top and the arms and legs of the seat may be made from rough limbs with the bark left on. The same material is used for braces. If gnarled limbs can be obtained for these all the better, but the framework is of secondary importance as it will be covered with vines by the middle of the summer.

A more simple mode of construction would be to make the top flat. For this use straight pieces instead of hoops. The effect will be less picturesque, but when covered with vines it will make but little difference. If possible face the seats north and south, as more shade will be obtained from the ends when the sun is low in the afternoon.

Often shade is needed at some special point on the lawn, and the illustration given of a summer-house with a double-domed roof and two circular seats offers suggestions for that purpose.

In the arrangement for this summer house six corner posts are planted. Of course, the size of these bowers must vary according to individual needs, but they must not rise too high above ground. They will be useless for shade if carried up more than eight feet.



FIG. 1843. A SHADY RETREAT.

Centre posts rise to a height of eleven feet, and long hoops are carried diagonally from corner to corner. These are firmly nailed to the centre posts, on which they cross. Straight pieces are carried around horizontally from post to post; these are supported by brackets. The hoops may also be connected by light stuff. A seat is constructed around each centre post, and a light railing runs around these sides. At the base the entrance is generally left free of adornment of any sort.

Many vines which flower lovers would like to use are worthless for

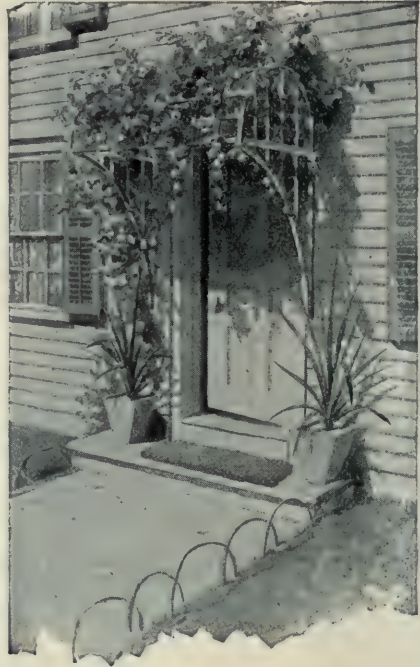


FIG. 1844. A SHADED DOORWAY.

the purpose of shade. The sweet pea would be a general favorite if it grew to a sufficient height, but it does not. The morning-glory and the wild cucumber are both desirable. The former will grow to a height of twenty feet in a season. The wild cucumber also has

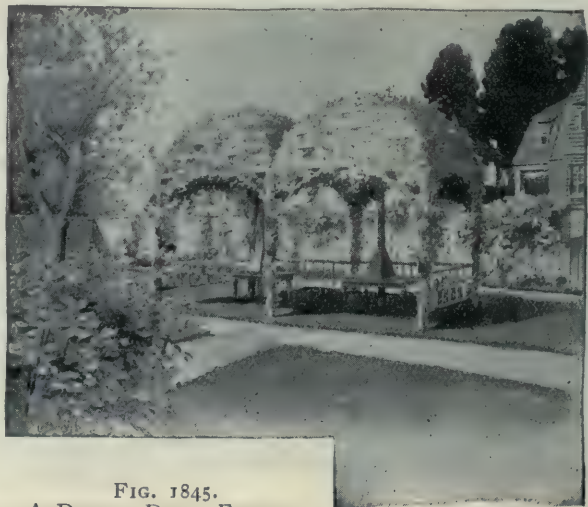


FIG. 1845.
A DOUBLE-DOME EFFECT.

a rapid growth, and its flowers when seen in masses are very effective ; it is to summer plants what the native clematis is to our perennial vines. Some of the ornamental gourds are available for covering summer houses, their large leaves overlap and afford a dense shade, which is, of course, indispensable in a summer-house. The variegated Japan hop will answer for the purpose of shade ; it has a rapid growth and an attractive foliage.

An illustration which needs little description is the one in which an old sketching umbrella frame is utilized for the canopy at the top of the centre post, or constructed of a large wooden hoop supported on a wire properly bent. A pot is set on or in the post on each side, and a ladder-like framework of light sticks connects them with the canopy. If desired, wooden boxes may be built in place of the pots. In fact, it would doubtless be a wiser plan to use boxes as they may be nailed securely to the posts. The centre post must be carried up to a height of seven feet so that it may be passed beneath without chance of brushing the hat of one's tallest guest. Paint in harmony with the house. Nothing will be so pretty



FIG. 1846. A SHADED TURNSTILE.

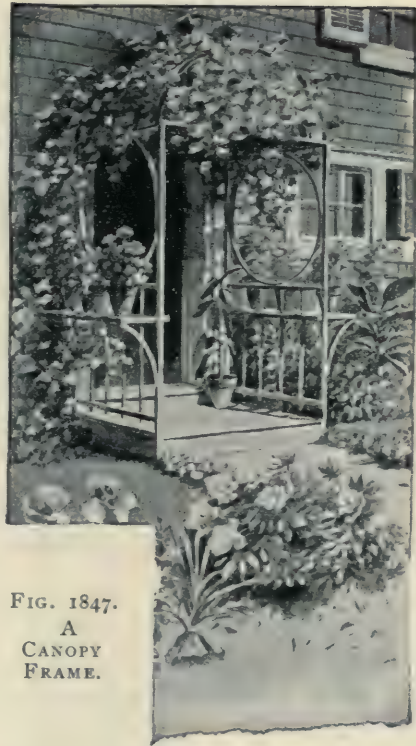
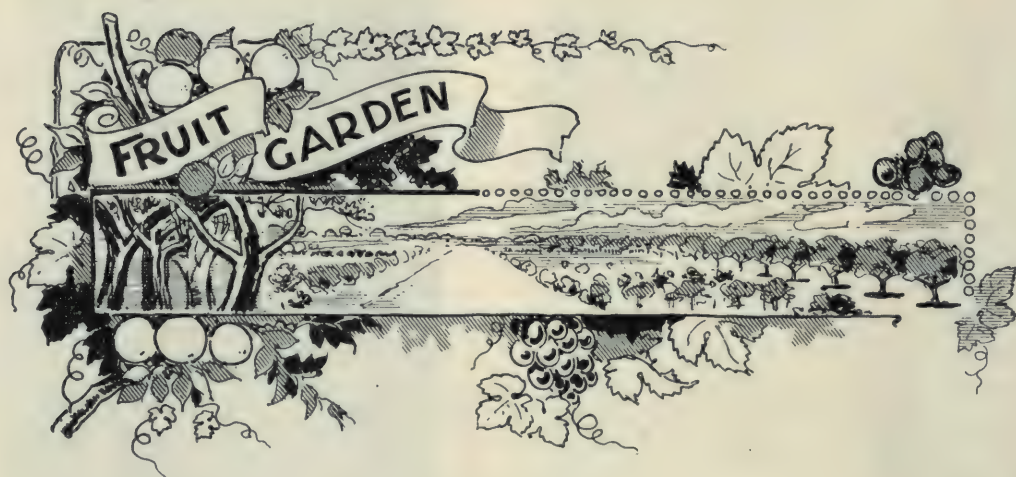


FIG. 1847.
A
CANOPY
FRAME.

or so attractive to plant about this gate as nasturtiums.

Very often the entrance to a house lacks a canopy or porch, in which case the arrangement shown in illustrations show two light canopy frames, which, when covered with vines, will afford a grateful shade. A feature of one is the shelf for potted plants. Brilliant geraniums are especially effective for the purpose, their glowing blossoms fairly burning against the dark green of the grape vine's broad foliage. When constructing the simpler one bring the brackets down toward the base of the doorposts. The doorway may be flanked with cacti or other plants of a decorative character.

For planting a door having a canopy I would advise *Celastrus scandens* or *Ampelopsis*. The native grape may also be used. All three of the above are attractive and nearly always prove satisfactory.



FRUIT CULTURE.—VI.

THE PEAR.

THIS excellent fruit, so generally and deservedly esteemed, should always secure a prominent place in the orchard of the commercial grower and in the amateur's garden. By a judicious selection of varieties fruit can be enjoyed from August to January. It was one of the few fruits successfully marketed in England in 1898, and a profitable trade in that direction might be built up if the right varieties are grown and the packing carefully done.

SOIL.—The soil conditions favorable for the apple are equally favorable for the pear. On a wet soil it will soon become diseased and sickly. As long as the subsoil is fairly porous and dry the tree will thrive and produce fruit of excellent quality on moderately heavy clay. In short, if the drainage is good and the ground tolerably rich the pear can be successfully cultivated in almost any soil from sand to clay, though a strong clay loam may be regarded as the best type of soil.

SELECTION OF TREES, PLANTING AND PRUNING.—There are two types of pear trees com-

monly grown—standards and dwarfs. With the standard sorts the variety is grafted or budded on pear stock, and trees of this kind will last a life-time. To render the tree of a dwarf habit the quince stock is used. This allows of a much closer planting, twelve or fourteen feet apart, while the standards should not be nearer than twenty. The quince stock creates an early bearing habit, but the tree is comparatively short-lived. Some varieties succeed better on quince stock, even the flavor improving. The most notable are *Duchess d'Angouleme*, *Beurre Diel*, *Easter Beurre* and *Louise Bonne de Jersey*. Two-year old trees are decidedly preferable to three for planting; the root of the pear is not very fibrous at any time, and, as trees are usually dug in the nursery (see Figs. 8, 9, 10), the older the trees the less of the fibrous roots left. Planting has been fully described already. Figs. 36, 37 illustrates the manner of pruning back the newly set standard tree. As the limbs of the pear have a more upright habit of growth than those of the apple, the head may be started somewhat lower, and the shading of the



trunk will lessen the danger of sun scald. The subsequent pruning of the pear consists in thinning out the head, removing any lower sprouts and shortening any very rampant growths. In pruning back these strong twigs cut close to an outside bud, the tendency being then to grow a more spreading top. Dwarfs are grown on the pyramid system or the "inverted cone" plan, usually the latter. The head should be started lower and pruning be constant and systematic. Fig. 38 represents a tree cut back in the second year, a well branched head and no bad crotches. Fig. 39 exemplifies a poor type of dwarf pear, where sufficient care has not been given to the formation of the head. A better type is seen in Figs. 41, 42, and the requisite pruning clearly indicated. The manuring and tillage of the pear orchard should be similar to that of the ap-



ple orchard. Cultivation should be kept up late with young trees or a rank growth is induced, especially on rich soils, in which the wood may fail to ripen, and winter killing and blight will probably result. Old trees of the "choke-pear" variety may be



profitably grafted with better kinds. Figs. 43, 44 show the process. The old top, as in the case of grafting large apple trees, must be gradually reduced and not all taken off in one year. A tree over sixty years old of this kind on the writer's farm, had about seventy grafts of Bartlett and Beurre Bosc put in some years ago. A fair proportion of the grafts took, and many baskets of fine fruit of these varieties have since been gathered.

VARIETIES.—In the choice of varieties consideration must be given to the structure of the blossom. Some varieties are almost self-sterile, and should be intermingled with varieties having an abundance of pollen. Among those more or less self-sterile are *Anjou*, *Bartlett*, *Clapp*, *Clairgeau*, *Lawrence*, *Louise Bonne*, *Sheldon* and *Winter Nelis*. Self-fertile varieties include *Duchess d'Angouleme*, *Beurre Bosc*, *Beurre Diel*, *Flemish Beauty*, *Keiffer*, *Seckel* and *Tyson*. In the coldest districts of Ontario pear culture can hardly be successful. One or two Russian varieties might be tried, and the Central Farm Horticultural Department, Ottawa, will give full information on this point. If it is desired to plant a few of the better kinds, the following are suggested for trial: *Flemish Beauty*, *Anjou*, *Keiffer*, *Clairgeau* and *Clapp*.

For sections where the sweet cherry succeeds, and the finer kinds of *Domestica* plums, the following list is suggested in order of season: *Clapp*, *Tyson*, *Bartlett*, *Flemish Beauty*, *Duchess d'Angouleme*, *Boussock*, *Beurre Bosc*, *Beurre Diel*, *Beurre d'Anjou*, *Beurre Clairgeau*, *Keiffer* and *Lawrence*. For home use, *Rostiezer*, *Sheldon* and *Seckel* must be added—three varieties of the highest quality. In a commercial orchard it is doubtfully wise to have many varieties. In southern Ontario a good short list would be *Bartlett*, *Bosc*, *Anjou*, *Clairgeau*, *Keiffer* and *Lawrence*.

In the culture of pears for the home use, it should be added that, to secure the highest flavor, the fruit should be picked when the stock parts easily from the stem on lifting the pear, and ripened indoors. The winter pears should be kept in a cool dry place until about ten days from the ripening time, at which time all pears should be placed in a room with the temperature of from 65 to 70 degrees.

DISEASES.—**Blight**—This bacterial disease is the most serious drawback to pear culture. The life-history of this malady has been thoroughly explored and described. The disease usually effects an entrance into the tree through the blossom or the ends of the young twigs, penetrating to the lower part of the branch, and often communicating itself to many of the larger limbs. If all affected wood is not properly cut out and burned, enough of the bacteria will survive the winter to spread the trouble broadcast next year. It has been often suggested that putting the orchard into sod will minimise the danger. The evidence is, however, very contradictory on this point, and there are manifest disadvantages attending the practice. The more sod the less fruit, as a rule, and the fruit on the cultivated ground is invariably larger. The better way is to avoid heavy manuring of non-bearing trees, and late cultivation, and choose varieties which

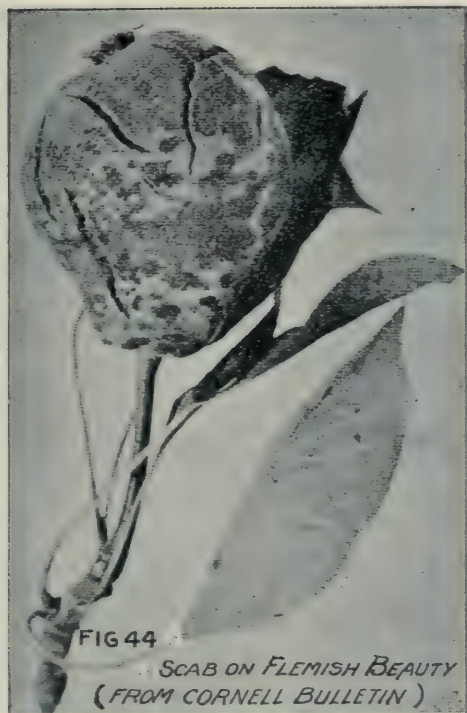


FIG 44

SCAB ON FLEMISH BEAUTY
(FROM CORNELL BULLETIN)

are more or less resistant. *Clapp's Favorite*, *Souvenir de Congress* and *Bartlett*, especially the first, are highly subject to blight, while *Keiffer*, *Seckel* and *Tyson* have rarely suffered. This is a question which the intending pear-grower would do well to study closely.

Pear-scab.—(See Fig. 44). Though distinct from the apple-scab fungus, it must be fought in the same way and by the same means.

INSECTS.—The curculio, codling moth and pear-slug are the commonest insect enemies given on p. 176 of the 1897-98 Inst. Report.

THE PLUM.

Nothing need be said as to the claims of this fruit on the amateur or commercial grower. The productiveness and hardiness of the tree, and the many good qualities of the fruit, speak for themselves. From the three types now cultivated, the Domestic or European, the Japanese and the native American class, can be selected varieties

that will be successful in all parts of Ontario. It will survive conditions fatal to many other fruits, but will abundantly repay careful attention and high culture. Like the pear, it may be profitably grown on all kinds of soil, but will succeed best and give the highest quality of fruit on heavy ground. Strong clay soils, properly drained, will be found perfectly suitable.

PLANTING AND PRUNING.—The planting and pruning of the first three years are much the same as with the apple. Fig. 45 indicates the manner of pruning the young trees. This, however, is a two year old tree, and with all the vigorous varieties it is far better to plant one year old trees.

Such stock is cheaper, the root will be more fibrous than in Fig. 42, the losses in planting will be less, and in a few years' time it will catch up or surpass the older tree. Fig. 46 is a picture of a block of young Burbank trees planted on a rather hard clay soil in the spring of 1897. The trees were strong one year olds, were cut back to a whip about three feet high. Not a tree was lost, and the whole block is exceptionally thrifty. The head of the young tree should be kept fairly open, and the vigorous growths may be shortened in one half. Some growers practice the shortening-in method year after year. This may be done to advantage with vigorous and erect growers like *Pond's Seedling* and *Bradshaw*, but as soon as the tree bears, these long growths will be checked naturally,

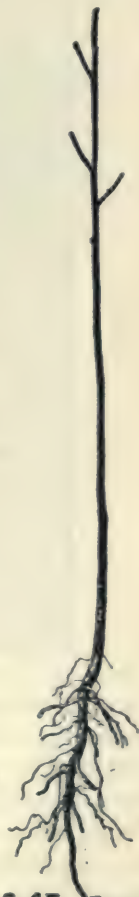


FIG 45 BAILEY
Young
plum stock
well trimmed.



and after the head is once formed it is questionable if any pruning is advisable beyond the thinning out of crowding shoots, and the removal of broken or injured branches.

MANURING AND CULTIVATION should be the same as with other fruits trees. When the trees are bearing a full crop, a good dressing of cow manure and an application of wood ashes will give good returns, as the

maturing of so large a number of seeds is necessarily an exhaustive process of both tree and soil.

VARIETIES—In the coldest sections of Ontario it would be advisable to attempt the growing of many plums of the European and Japanese types. A few trees might be tried. *Glass Seedlings*, a large blue plum of only medium quality; the *English Damson*, Yel-

low Egg, *Lombard* and *Reine Claude* will be found amongst the hardiest, notably the two first. Among the native plums, *Wolf*, *De Soto*, *Hawkeye* and *Rollingstone* may be recommended. These are very hardy, comparatively free from disease, and though small, are excellent for canning purposes. In the milder sections the following list of the European class are suggested for commercial purposes, in order of ripening; *Bradshaw*, large blue; *Imperial Gage*, greenish-yellow; *Washington*, large greenish-yellow; *Smith's Orleans*, blue; *Lombard*; *Yellow Egg*; *German or Italian Prune*, blue; *Reine Claude*, green; *Coe's Golden Drop* and *English Damson*.

For the planter's own use, *Hulings Superb* and *McLaughlin* may be added, both plums of the gage kind, and of the highest quality. Other excellent sorts are *Prince of Wales*, *Duane's Purple* and *Goliath*. *Lombard*, the most commonly grown plum, is probably over-planted. It is a vigorous grower, productive and fairly hardy. On the other hand, it comes in at a bad time—mid-season—is very subject to rot and black-knot, and is of poor quality. It needs good care and thinning to do really well. The Japanese types are proving as hardy as many of the European class, but many of them are of inferior quality. *Abundance* (see Fig. 46a), *Red June* and *Burbank*, are the ones recommended here. The *Abundance* is an upright grower with slender branches, a good and early bearer but rather subject, as is *Burbank*, to rot. Fig. 47 shows the characteristic growth. This variety should be shortened in to outside buds to encourage a spreading habit. *Burbank*, Fig. 48, runs to the opposite extreme, throwing out strong, wide-spreading limbs, and must be pruned accordingly.



A PRECOCIOUS SPECIMEN.
"BURBANK".
2 YRS. FROM THE BUD.

FIG. 48 A.

M. BURRELL.

DISEASES.—*Monilia*, or rot, is by far the worst thing to contend with in plum culture. It has been referred to under the peach. Thinning will tend to lessen it, as will systematic spraying with Bordeaux mixture. When the plums are ripening, all specimens showing rot should be gathered separately and destroyed. None should be left on the tree, as the shrivelled plums that pass the winter on the tree will undoubtedly carry the spores of the fungus to the next year's crop.

Black-knot is also a fungus, maturing its spores twice a year, in May or June, and again in February or March. Constant cutting out and burning of all knots will control this disease in any orchard, but it becomes a difficult matter to subdue the disease unless the whole neighborhood co-operates in the task with something like thoroughness.

Curculio and plant lice are the insects

most troublesome to the plum. Both are dealt with in the publications referred to previously. It may be added that the four ounces of Paris green to the barrel will by no means kill all the curculio, and in a season when this insect is plentiful an undesirable number of plums will still be de-

stroyed. Five and even six ounces can be used to forty gallons as long as plenty of lime is used to neutralize the caustic effect of the arsenic.

M. BURRELL.

St. Catharines, Ont.

THE PEAR—PIRUS COMMUNIS.

THE pear tree has been under cultivation for a period unknown. It is found wild in the British Isles, and is a native of most parts of temperate Europe, it is also found in the Himalayan region.

The pear is well worthy of the title, the "Queen of Fruits," in the Province of Ontario, where it is grown as near perfection as can be done in any country.

The pear attains to a greater height than the apple, and is more upright in growth; it also lives to a great age. There are instances known where the pear lived to over four hundred years.

Every person knows what uses the pear fruit is put to. It is first used for decorating the table, then for dessert, stewing, baking, drying and for manufacturing into perry.

The pear has its insect enemies and diseases like the rest of our fruits, the worst disease being the blight. Having had considerable experience in growing fruit, and, being a keen observer of their habits, I had the good fortune to overcome this disease called fire blight, and it may be that some growers would like to know my methods of checking the disease.

I learned my first lesson from the Seckel pear tree. I noticed that this variety seldom blighted, nor are the other varieties resembling the Seckel in its short-jointed wood so subject to blight as are the soft willow long-jointed growth of many other varieties.



FIG. 1838.

I noticed that the Seckel pear tree ripens its wood before the dry hot weather sets in, or in other words it ripens its wood as it is made.

My observations led me to imitate the Seckel growth by inforcing the same on all other varieties, which can only be done by pruning on the severe spur system—such as the cut herewith represents—a system, I think, not too well known in this country. This system is one of the good ones that must be imported.

To prune the pear in this way from the baby tree up tends to prolong the useful life of the same; it makes the shy bearing varieties more fruitful; it increases the size of the fruit; it gives it higher color, as well

above operation, but the older the trees get the less will become the wood growth which will be replaced by fruit buds, and that more numerous year by year as the pruning on this system goes on.

A very important factor to make the cultivation of the pear tree a success is the soil. The pear tree succeeds in any good deep loamy soil, provided the subsoil is well drained to three and a half or four feet deep so as to be free from stagnant water.

The pear will generally thrive where the apple will grow well. The pear will thrive



FIG. 1839. PEAR BRANCH SPUR PRUNED.

as much better flavor; it distributes and equalizes the sap throughout all the branches alike, which causes a more healthy vigor, when in turn the cultivator may expect uniform fruit of the largest size and best quality. This system is the greatest preventive of the blight known at the present time.

When pruning on the spur system is completed, which should be in the month of March, and that each year to be successful from the time the tree is planted.

The first few years of the trees' growth may appear to be rather rampant from the

well on a deep clay loam, but seldom succeeds on a stiff clay.

To complete the work necessary to the successful cultivation of the pear each tree should have a mulch of coal ashes as far as the spread of the branches in order to keep the roots cool and moist, to keep the clay soil from baking and shedding the rain or artificial water from the roots. This mulch is doubly beneficial to the dwarf pear on account of its being worked upon the quince roots which feed and spread near the surface. The quince does not like a dry hot soil to grow in, when the heat of the

sun and the drouth at the roots stop the sap from flowing into the half matured young twigs. In such conditions they have to stand still during the hottest part of the summer, and by the time the cool nights and the fall rains come, the pith in the centre of the young twigs is dried up and dead, the disease continuing downwards until the tree is dead. It will be seen then that any cool and porous material on the surface of the soil will be of great benefit as a preventive. It will also be seen that the pruning on the above system, stimulating an equal and earlier growth, will have the tendency to make the growth ripen earlier or mature earlier and even on the young twigs. I am also a great believer in wood ashes and bone meal as a fertilizer.


I also strongly believe in using lots of lime in the soil for all tree fruits. I think there is more virtue in lime to our fruits than is known to the majority of fruit growers ; it certainly warms and sweetens the soil and there are few insects that like lime.

Slacked lime is as good as sulphur to prevent mildew on the grape vine ; it helps to prevent the rot in the plum fruit ; it will partly check the curl leaf in the peach tree ; it will kill the slug that eats the coating of the cherry tree leaves ; it will check the ravages of the caterpillars on the gooseberries and currants ; the black fly does not like it on cabbage, or turnips, or radishes, and it will help check the scab on apples and pears. Whitewash the trunks and branches of all trees with a wash of lime, soft soap and clay to thicken as a paint ; scrape first the trunks and branches of all their rough bark ; if the trees are stunted and hide-bound run a strong jack-knife lengthwise through the outer bark along the trunk and branches, but never cut across the trunk or branches, then apply the whitewash, and, I think you will be agreeably surprised at the results derived from the operation.

R. CAMERON.

Read before the Niagara Falls South Horticultural Society 9th April, 1900.

WORMY APPLES.

 HERE is nothing new about wormy apples except the way to avoid having them. There are several species of grubs or worms which work in apples, but the one which does nearly all the damage is the core worm. The core worm is the offspring of the codling moth, and this is the insect which a man wants to fight in his apple trees.

The best general remedy for the core worm, or codling moth, according to information furnished by the Vermont experimental station, is Paris green. Some apple growers use London purple ; others use white arsenic ; but they amount to the same thing. They all poison the core worms. Other insecticides like hellebore, kerosene or sulphur, are not effective in this case.

In the hands of the average man Paris

green is the best medicine for the codling moth. The poison should be thoroughly mixed with water at the rate of a quarter of a pound to the barrel—that is about one pound of paris green to 160-200 gallons of water. About a pound of lime ought to be added to each barrel of water, which will prevent scalding of the foliage. It should be applied with a spray pump and fine nozzle. In case Bordeaux mixture is used on the trees the Paris green may be added directly to that solution at the rate already recommended.

The first spraying for the codling moth should be made as soon as the blossoms fall, or within a week afterward. It is very important to do this before the little apples begin to hang down their heads, as after that time they do not catch and hold the poison.—*Vermont Experimental Station.*

CULTIVATION OF AN ORCHARD.

IN The Farming World of June 12th, W. J. P. says that simple mechanical cultivation of the soil may be detrimental, whereas the seeding down of an orchard is most economic and scientific. In a previous sentence he says that fruit specialists do not give reasons for their views in favor of tillage. Does it not occur to W. J. P. that he has omitted giving reasons for his views? He gives an example of a large fruit grower in eastern Ontario who always keeps his orchard in grass, and has good results, but an example is not a proof, for conditions are so various. The writer has an apple orchard on moist, deep sandy loam, that has not been plowed for fifty years, and yet produces excellent crops; and our friend, Mr. E. C. Beman, of Newcastle, has a pear orchard of similar soil, which he never plows, but allows the grass year by year to remain and decay. But these examples are not for every one to follow, for on a dry or heavy soil, with blue grass sod, for example, an apple or a pear orchard would soon become stunted in growth and barren of fruit.

It is in years of drouth, to which we are often subject in Ontario, that the greatest injury is done to our apple orchards by lack of tillage. The wood and fruit buds do not fully develop, and the crop for the succeeding season will be of small size, and scant in quantity. This is of course an assertion only, but it can easily be proven, both by example and by theory. Now of what use is tillage any way? We grant W. J. P. that it cannot put fertility into the soil, but we do

assert that it makes available to the tree roots the fertility which would otherwise remain locked up. So important do we consider this that we always hesitate to apply manure to any part of the orchard that is not under cultivation, thus exposing the particles of the soil to the action of the oxygen: the air has a chemical action which the study of agricultural chemistry shows will (1) set free plant food, (2) promotes nitrification, (3) decompose vegetable matter.

Tillage also exerts a great mechanical benefit, increasing soil depth, and breaking it up into fine particles, easier penetrated by the rootlets of the trees; but the most important benefit is the conservation of moisture. When untilled the moisture is constantly being brought to the surface by what is known as capillary attraction, while cultivation fines the soil and breaks up this action, thus preventing the rapid escape of moisture.

These are a few of the reasons why tillage of orchards is so strongly advocated by specialists in fruit culture, but they might easily be amplified. The writer started out thirty years ago with the same view as that expressed by W. J. P., even planting a heavy clay field to an apple orchard with the fond hope of thus avoiding the hard work of plowing that field; but that fond hope was doomed to sad disappointment, and every succeeding year converts him more and more to a sense of chargin that he should ever expect any good results without labor.



RELATION OF CULTIVATION TO THE GROWTH AND DEVELOPMENT OF APPLE TREES.

WHITTEN, of Missouri, has been making some useful experiments on the effect of tillage on the growth and vigor of apple trees.

These conditions have long been considered by us at Maplehurst and by many of our best growers, who once thought that an orchard needed no tillage. Almost all have now become convinced of the necessity of giving their orchards the very best cultivation if an abundance of fine fruit is to be harvested.

The following are some of Whitten's points as given in Bulletin 49, University of Missouri, Columbia :

The greatest growth has been made by those orchards that have been cultivated most. Cultivated trees are uniformly healthier, more vigorous, and produce larger fruit than those not cultivated.

Cultivated trees make more uniform growth than do those not cultivated. The more cultivation the less they are effected

by drouth. The principal height growth of trees is made early in the season, when moisture supply is ample, so that a drouth later in the season does not affect the height growth of the current season ; its effect is, however, noticeable in the imperfect development of the fruit, and failure to properly mature and ripen the wood and buds for another season. The evil effects, therefore, will be more noticeable in the year succeeding a drouth than in the same year, when in the case of uncultivated orchards a generally devitalized condition may be looked for.

It is commonly thought that cultivation should always cease about August 1st, and no doubt for a wet season this would be wise in order to check the wood growth and allow it to be ripened in good time before winter ; but in a dry summer and autumn the orchard soil should be kept in good tilth until the crop matures, or at least until rains come.

FRUITS, OLD AND NEW.

SIR,—I would like to express through the columns of the Canadian Horticulturist, my admiration of the very valuable information and the many pointers contained in that column relating to Horticulture and Arboriculture, especially during the last few years. Having spent nearly 60 years in this country, and being familiarly acquainted with nearly all the counties from Kingston to Goderich north and south, for the last 25 years, I am fully persuaded that we, as Canadians, are not as far advanced in the art of Horticulture as we might be nor as we ought to be. If you take a drive, as I had the opportunity of doing last week, to the county east of us,

viz., Durham, and also west of us, viz., York, and through our own county, you would be not only surprised but disgusted at the number of nests of tent caterpillars to be seen on the route, and I assume that it is largely due to the neglect of spraying the orchards with the proper mixtures at the proper time, and I am sure it is not for the want of timely warning. As our Ontario Government has given practical lessons and advice which, if carried out, would rid the province in a few years of one of the worst enemies the orchardist has to contend with. I am pleased to be able to note the rapid advance made in the last few years in the way

of opening up new markets for our surplus fruits and the prices obtained for the same when properly put on the foreign markets, and just as soon as our people find out that it is more money in their pockets to grow one pound of choice Canadian fruit than to grow and handle two pounds of mixed or inferior stuff, more spraying, thinning, sorting and packing will be attended to, and certainly no shipper will attempt to forward to the European markets inferior fruit and expect the importers to make it O. K. unless the goods are as represented, and then we may look for a rise in the price when the purchaser knows before hand what he is getting. As a fruit grower, I think our system of selling not the right system. I believe our fruit ought to be handled more profitably if handled the same as grain or wool or other farm commodities, that is, for every one or two men in a municipality for instance, to receive all fruits subject to inspection, that grows in their district, forward it and sell it and pay the patrons what the goods are sold for. Our present system here is usually to sell to exporters and take what they give, which sometimes amounts to very little, but I anticipate considerable difficulty next season in getting the inspectors to pass the fruit unless more care is taken by shippers in having their fruit more properly graded and packed than formerly. Our fruit in this district appears at present to be the largest on record, beating the crop of '96. The apple, pear and cherry orchards has been from about the 20th ult. to the present time, one magnificent display of bloom, and the air was laden with the perfumes of the flowers. I notice, too, that the fruit on the apple, pear and cherry trees are very abundant, and unless thinning is resorted to a large proportion of the fruit will be below the standard sizes. In plums there was no bloom consequently we will have no fruit. In small fruits the crop will likely be above the average, in other words, a full crop. There are not many strawberries grown here for

export, but what are growing are looking very fine. Grapes have made a vigorous growth and are setting their fruit well. Currants will be a good average and raspberries a full crop. Nearly all our planting of 1896 and '97 are or have been in bloom and I expect to add largely to our exhibits of new varieties, especially in pears. Quite a number planted in '97 have fruit on them, some are not 3 ft. high. Take all in all the fruit prospects in this district are very favorable, and bid fair to eclipse any former year. The timely rain last night was of immense benefit to the growing crops of this county ; it was much needed. Tent caterpillars are very plentiful where spraying has not been attended to, but the careless will reap the result. Regarding newer varieties that I have tested and find very satisfactory, are the Salome, Shackleford, Gideon and Stark; they are all good growers, early bearers, good keepers and good color. The Stark is the fastest grower of any apple in the orchard, the Gideon coming a good second. The Salome is the longest keeper that I have ; the Shackleford is a beautiful apple, but rather small if allowed to over bear. I have a large number more new varieties that had a few apples last year, a detailed account of which I propose to give you later on, as most of the trees planted in '96 have set their fruit this year and many will require severe thinning. In pears, the Dempsey takes the lead in growing and is also loaded with young fruit. Winter Nelis, Doyenne 'd Ete, Beurre Easter, Bartlett, Seckel (a most delicious pear), Petite Marguerite and some others fruited last season and are again loaded this season ; I would just say that according to present prospects the apples and pears will be a record breaker this year. Cherries are well set and will be a good crop, but plums will hardly be found in this district. The weather is delightful and all sprayed orchards are looking fine at present.

Whitby.

R. L. HUGGARD.



TIMELY TOPICS FOR THE AMATEUR—V.

THE hot weather usually prevailing during the month of July brings a period of comparative rest and relaxation in garden work that is most acceptable after the busy time experienced during the spring and early summer.

Although routine work may not press so heavily as earlier in the season, sufficient can still be found to occupy all the spare time that one usually feels inclined to devote to the garden during the hot sultry weather; especially when, perhaps, other, and apparently more attractive sources of recreation present themselves to lure the plant lover away from his favorites. The garden, however, must not be entirely neglected as insect pests and weeds will still require constant attention to keep them under control. Fruit picking will be an acceptable relief to the usual routine of work in the garden.

Watering lawns and plants will also occupy considerable time and attention.

Extra care will be necessary in watering greenhouse plants, as many of these plants should now be enjoying a period of comparative rest that comes naturally to them when growing wild in their native haunts. This dormant, or semi-dormant, period in

plant life, requires to be of a much more decided character in some classes or germs of plants than in others, and, unless the plant grower has some knowledge of the requirements of the plants under his care, partial, or, perhaps, total, failure in their culture must of necessity be the result. Careless and indiscriminate watering of plants is responsible for many failures in plant culture at all seasons of the year.

THE GREENHOUSE.—The management of the greenhouse or conservatory during the hot months of summer, when most of its customary habitants are out of doors in their summer quarters, depends entirely on the class of plants that are still occupants of its benches. If Exotic ferns, fancy Caladiums, Anthuriums, Diffenbachias or similar plants that require great heat and moisture, are the principal occupants, the greenhouse must be kept well shaded and top ventilation almost entirely used in the day time, as these plants dislike anything like a draught. Very little ventilation, if any, must be given at night. Keep the floors well dampened and close the house an hour or two before the sun is off. This will keep down red spider. If the floors are kept well moistened very little spraying, if any, will be required.



FIG. 1840. PELARGONIUM.

Tobacco stems sprinkled under the benches, dampened occasionally and renewed every two or three weeks, will keep down thrip—an insect to be as much dreaded as red spider amongst a collection of these plants. If summer flowering Tuberous, or Rex Begonias, or Gloxinias are occupants of the greenhouse, ventilation may be given more freely, leaving the top ventilation open all night. Oftentimes there is little else but a climbing rose, planted out in a box or border, that has of necessity to be left in greenhouse during summer, or, perhaps, some other climbing plant that requires to be kept dormant so as to ripen its wood to produce a supply of flowers in the winter. In this case the house should be only partially shaded, the top and bottom ventilators should be kept open day and night, and only sufficient water used to keep the roots of the plant from drying out completely.

The beautiful climbing Allamandas that are sometimes seen in greenhouses, and

that give their wealth of large golden flowers so profusely during summer and early autumn, require plenty of shade, heat and moisture to produce the best results possible.

Most varieties of winter flowering Begonias succeed best, stood or plunged, out of doors in partial shade during the hot weather.

Fancy Caladiums may, perhaps, need re-potting into larger pots; care must be taken not to disturb the roots during the operation.

Chrysanthemums will require plenty of water at the roots, and syringing once a day in very dry weather. Tobacco stems spread around near these plants will help keep down the black aphid or fly.

Fuchias require plenty of shade and water; a little weak liquid manure will help them to continue flowering.

Old leaves of Rex Begonias or Gloxinias will strike readily in sand in the cutting bed. In cutting these for striking leave about half of the stem attached to the leaf, insert the stem and a small portion of the leaf into the sand. Keep the sand moist, but not saturated with water. About half of the outside of the Begonia leaf should be cut away before inserting in the sand. Pot into light sandy soil in small pots when rooted.

Early sown Cinerarias and Calceolarias will require to be potted into small pots, or transplanted into shallow boxes, as soon as they are large enough to handle. A sowing of both of these for later flowering may be made now. A sash and frame in a cool, shaded position out of doors is the best place to start the seeds, also, to grow the young plants, until they are taken into the greenhouse in the autumn.

Roses should be planted out on the benches toward the end of the month if any are grown in this way, but I do not consider bench roses profitable in a small greenhouse where a general collection of plants is grown.

The Niphetos Rose, budded on a lamarque or cloth of gold rose stock, will give good results in a small conservatory or greenhouse. Pot roses, for fall and winter flowering should be stood outside in partial shade, and given only sufficient water to keep the roots from drying out. Pelargoniums and Fuchsias that have done flowering can be treated in a similar way; as withholding water partially from these and similar spring and early summer flowering plants induces a period of rest and helps to harden the wood necessary to produce flowering results next season.

Any repairs required to the greenhouse should be done now when most of the plants are out of doors. Give the sashes and woodwork a good scrubbing and cleaning with whale oil soap and water.

WINDOW PLANTS.—Watering and keeping free from insects are the principal features in window gardening just now. If any old plants of Geraniums are required for next winter's flowering they should be cut back to the old wood, and, as soon as the young buds appear, shake the roots partially out from the soil, cut off a portion of the roots and repot into a size smaller pot if possible; water very sparingly until well rooted. These will do best stood or plunged out of doors in the open ground. Fuchsias and many other plants required for winter flowering will succeed best stood out of doors in partial shade and not watered too heavily for a few weeks.

FLOWER GARDEN.—Watering and keeping down the weeds will be the heaviest work probably in this department, as the lawn will require very little attention during the dry season so far as cutting the grass is concerned.

Most of the perennials will be past their flowering season, Gaillardia Grandiflora, Rudbeckia (Golden Glow) and a few others may still give a few flowers. Early sown Asters, Zinnias, etc., will soon be coming into flower.

Dahlias will require plenty of water at the roots, syringing the foliage liberally in the evening will materially assist the growth of these autumn favorites. Some of the Cactus and single-flowered Dahlias are very pretty, and better suited for decorative purposes as cut flowers than the more massive blooms of the show varieties.

The double Rudbeckia (Golden Glow) is indispensable in the flower garden, its wealth of golden blossoms being produced in great profusion during the hottest weather, and it often gives quite a sprinkling of flowers until quite late in the fall. It requires very little care and seems to flourish in almost any kind of soil.

The herbaceous Hibiscus (Crimson Eye) makes a showy decorative plant for the lawn or border. Its large funnel-shaped flowers, produced in July, or early in August, when flowers are scarce, make it a conspicuous object when in flower. Being herbaceous in character it can be easily protected by a heavy mulching in winter, although, it has proved quite hardy in this section without any protection.

FRUIT GARDEN.—Currants, gooseberries, raspberries and late cherries should claim quite a share of the time that can be devoted to the fruit garden during July.

Plums, pears and peaches if too thickly set may be thinned to advantage. Green peaches make a splendid pickle if pickled just before the pit hardens. These should be treated the same as for walnuts in the pickling process. Plums when green can be used for stewing, but they make tremendous inroads on the contents of the sugar bowl.

Grape vines must be gone over occasionally and useless and lateral growth removed. For prevention and cure of mildew on grapes a good composition can be made by putting one pound of lime and half a pound of sulphur into three gallons of water, and boil slowly until reduced nearly one half. Allow the liquid to stand and cool, skim and

strain carefully. A teacupful of the liquid may be used once or twice a week, diluted in four gallons of water. If the liquid is strained carefully it will not spot or discolor the fruit when the vines are syringed with it. The liquid can be kept for a long time corked up in bottles or jars.

VEGETABLE GARDEN.—There should be a good supply of fresh vegetables ready for use now in this department that will be most acceptable, as potatoes, beans, peas and early planted cabbage and cauliflower should now be giving returns for labor and care bestowed on them earlier in the season.

A row or two of beans may be planted, if the weather is suitable they will furnish a supply of this useful vegetable until the first pinch of frosty weather touches them.

Late cabbages should be planted at once if not already done; these can be planted where crops of early peas or potatoes have been taken off. Dig and manure the ground well before planting them.

A row or two of beets may be sown, these are much more tender eating during fall and winter than those sown early in spring. Sow a few rows of spinach seed, it may come in nicely for use in early autumn.

Plant celery in shallow, well-manured trenches. Celery requires plenty of water during dry weather. The end of July will be early enough to plant celery for winter use.

White turnips may be sown if you have a spare piece of ground; mix a few Chinese rose or white radish seeds with the turnip seed before sowing. Light, rich soil suits white turnips best.

Spray or sprinkle potatoes with Bordeaux mixture; a little more Paris green may be used than is usual in this mixture to keep down the potato bug.

Keep the hoe busy, surface stirring the soil helps to keep it moist and cool as well as to destroy the weeds.

HORTUS, Hamilton.

TRADESCANTIA.



FIG. 1841. TRADESCANTIA.

TRADESCANTIA, or WANDERING JEW, is such a favorite with all amateurs being so easily grown and withal so pretty that our readers will be interested in the following note from *Vick's Magazine* concerning the florist whose name it bears: Its botanical name is associated with a celebrated florist, John Tradescant, gardener to that unfortunate monarch, Charles I. Tradescant was a

Dutchman, and was called Tradeskin by his associates. He established a botanic garden in Lambeth, England, as early as 1629, which was then a rare thing. He also collected a botanical museum, of which Flatman, the painter-poet, said

Thus John Tradeskin starves our wandering eyes
By buying up his new-born rarities.

He bequeathed this museum to his friend Elias Ashmole. His wife contested the will, but failing in her suit, and not willing to be resigned to the loss of the museum, she foolishly drowned herself; this tragedy so affected Ashmole that he did not care to keep it in his possession, and he presented the museum to the University of Oxford in 1677.



FIG. 1842. AZALEAS GROWN BY S. AYLETT, HAMILTON.

AZALEA CULTURE.

AZALEA INDICA is one of our most popular winter and spring flowering evergreen plants. With a good collection, the Azalea may be had in flower from Christmas to May, if kept in a cool house and a few plants brought into a higher temperature as the buds advance.

SOIL.

The best soil for the Azalea is a compost of two parts good leaf-mould, one of light fibrous loam, and a little well-rotted manure.

DRAINAGE.

Thorough drainage of the pots is most essential. Pot firmly, and do not use too large sized pots. Be sure the ball of roots is thoroughly soaked before potting. Large plants do not need repotting very often, but should be given a little weak manure water occasionally. The best time to repot the Azalea is soon after it has done flowering.

After potting they should be kept in a close atmosphere for a few days, and freely syringed. About the end of May they should be plunged outside in partial shade, and kept well syringed and watered every day during the hot months to encourage new growth and the forming of new flower buds. They should be taken inside before the first frost and given less water until they begin to flower, when they again require a free supply.

The Azalea as a house plant has not hitherto been a success. The atmosphere of an ordinary dwelling is too dry, thus encouraging red spider and thrip, which soon destroy the foliage. If the plants are syringed with water every day they will be greatly benefited, and by this means some have managed to grow them successfully for at least three successive seasons.

Hamilton.

SAMUEL AYLETT.

A NOVEL TRELLIS.

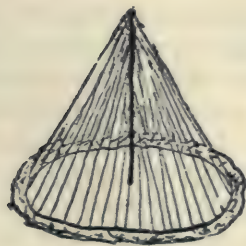


FIG. 1843.

A NOVEL TRELLIS for morning glories is thus described in *Park's Floral Magazine*: I make a trench four inches wide, in a circle

eight feet in diameter. After the soil has been enriched by rotted manure, and well pulverized, plant the seeds. The plants grow quickly and in a few weeks they will be large enough to string. Put a pole eight feet high in the centre of the circle; insert one end in the ground, and in the other drive a nail; put the strings four inches apart at the bottom, carrying around the nail in the top of pole and down again. If a door is made in one side it makes a novel tent for the little folks, besides being beautiful.



PALMS.

THERE are a great many varieties of palms grown for decorative purposes, some of the most popular, in the order in which they are most favorably known, are the following :

Kentia Balmoriana. This is probably the best house palm grown, and is increasing in favor every year. It is not a rapid grower, but in a light place in a warm room and with sufficient water, the leaves being kept sponged off and clean, it makes an ideal house plant and improves from year to year. I have seen several of these house-grown palms better than any coming from green-houses.

Next in order comes *Kentia Fosteriana*, a fine palm, but generally a stronger grower than the preceding. Some of this variety shown last fall prove what can be done in the house with it. The fine *Kentia Canterburyana* is rather expensive. The hardy and very graceful *Cocos Weddelliana* is fine for a warm house, but is not so long-lived as the *Kentias*; it stands the wear and tear of the house very well for one season.

The *Phoenix Rupicola* is one of the most graceful palms grown, and like nearly all of the *Phoenix* tribe stands the house treatment well. It is a slow grower and rather expensive, but with a little care will last many years—which may be said of several other varieties of the *Phoenix*, viz., *Canariensis*, *Tennessima*, *Sanderiana*, *Dactylifera*, etc.

Latania Borbonica is a favorite house plant in places where it can have considerable room to spread. But a much finer variety, with something of the same character, is *Levistonina rotundifolia*, of a more compact growth than *Borbonica*, and quite as hardy and useful.

Rhapis flabelliformis is rather a slow grower, but one of the best hardy decorative palms we have. *Rhapis humilis* is quite as

hardy and is more graceful and of a brighter green, but is scarce and expensive, and so it is seldom seen here.

The very graceful *Areca lutescens* is much in use in the United States, but has not proved a good house plant here, seldom lasting more than one season, even with careful treatment.

Chamaerops fortunei will stand much ill-treatment, but grows slowly and looks stiff, while *Geonoma Gracilis* is pretty, but tender and scarce. *Areca Verschaffeltia*, a good, hardy variety for a warm house, has a distinct appearance, but is rather expensive.

Several varieties of *Caryotas* are known to growers as pretty plants, but are seldom seen outside of private collections in this country. The same may be said of varieties of *Calamus*, several fine specimens of which are in the collection at Exhibition Park.

There are a great many plants called palms that are not really palms, such as the *Cycads* and several varieties of *Pandanus*. Very many more varieties of the palm beside those above mentioned, are well known to florists. The edges and tops of the leaves turn brown from various causes—from want of water, from getting too much water; sometimes furnace gas is the cause, or the air becoming too hot through radiators, stove pipes, etc. Palms do not want large pots unless they are growing very freely, and even then it is best, in repotting them, to give them a pot only one size larger than the one they have been growing in.

The soil I like best for palms is made up of one-half sandy loam and one-half well-rotted manure. The soil should be worked evenly down around the sides of the pot and pounded tight with a potting stick. Before repotting the plant should be well watered, and also after the potting is done, so that all the soil may be equally moist.

A great mistake is often made by amateurs in potting up plants that are not doing well. Many fancy that when a plant looks sickly it should be repotted. Perhaps it is in an eight-inch pot; they procure a pail, some nicely sifted soil, and carefully transfer their plant, putting the soil in as lightly as possible and never pressing it down for fear of hurting the roots. The plant soon dies,

while the owner thinks he has given it the best of care. A plant never needs a larger pot unless the pot it is in is full of healthy roots. A sick plant with few roots may want repotting, but it is into new, sweet soil, and a smaller pot, the soil without much manure and the plant firmly set.

By MR. THOS. MANTON, of Manton Bros., Florists, Eglinton.
Read before the Toronto Horticultural Society.

LAWNS AND WALKS.—These, if kept trim and neat, as they should be, add to the appearance of and contribute greatly to the enjoyment of a place by its proprietor and friends. The lawns should be mown and the edges cut at least once a week, and if there are any "bents" or flower stalks of weeds or grasses which the machine will not cut, these should be cut with a scythe. Where the grass is thin the collecting box may with advantage be left off the mowing machine. Gravel walks should not be hoed, but all coarse weeds are best pulled up, and if there are many small weeds appearing,

one of the simplest methods of getting rid of them is to dress the walks with rough salt obtained from manure dealers. This should be applied during hot, sunny weather, and in sufficient quantities to just whiten the surface. Crude carbolic acid used at the rate of one ounce to a gallon of water and liberally applied with a rose watering-pot, is both a cheap and effective remedy. Whatever destructive agent be employed, care must be taken not to let it touch either the roots and tops of box or other edgings, nor the lawn grass.—*Garden Work*.

WINDOW BOXES.—A charming arrangement was noticed recently. The plants employed were nasturtiums only, and the entire cost could not have exceeded fifty cents. The box was of rough boards evidently, strongly joined, and set upon a pair of iron brackets. The box was covered with floor oilcloth, tacked on, and the design was such that it looked like tile work. The colors were cream and brown. A pine frame the width of the window, and six inches across, was nailed to the top of the window for attaching the strings on which the vines were supported. The nasturtiums were of both the dwarf and climbing sorts. A drapery

of trailing nasturtiums fell over the edge of the box, and dwarf nasturtiums filled the centre, and all were of the deepest, richest colors known to this flower. The nasturtiums that were trained up the supports were of lighter colors, lemon and orange, and cream. The middle strings had been loosened and the vines had been drawn back from the centre to each side by strong strings; the whole appearance being a diamond-shaped aperture surrounded by a drapery of living green. The effect was equally charming from within and without.—*Vick's Magazine*.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE NOVA SCOTIA School of Horticulture had 69 students last year. The expenses of the school were \$1,843.47.

CHERRY CURCULIO.—This insect is often very injurious to the cherry crop, and must be fought persistently with Paris green. Three ounces to forty gallons of water is the usual amount, and two or three times that quantity of lime should be added to prevent injury to the foliage, and help to hold the Paris green to the same.

THE CANKER WORM has been exceedingly troublesome in many of our apple orchards this spring, especially on Spy trees. The infested trees should be early sprayed with Paris green, 4 to 6 ounces with the same of lime to 50 gallons of water. The lime should be reduced to milky consistency and run through a wire sieve to avoid clogging the nozzles. When the worm is well grown

Paris green is said to be less effective, and Bowker's arsenic lead, 3 ounces to 50 gallons of water, is an effective remedy. The Ohio Experimental Station says this mixture does not injure the foliage. It is milky white in appearance, as thin as water, and adheres for weeks. It may be procured from the Bowker Chemical Works, Boston.

KEEPING WINTER APPLES IN WAXED PAPER—Youngers, of the Nebraska H. S., has reported on his experiments under this head. In fall of 1897, about November 1st, all available varieties were put in cold storage, each apple wrapped first in a sheet of waxed paper—9x12 inches for the smaller and 12x12 for the larger ones. Another cover of newspaper was added, and then all packed tightly in barrels and put in cold storage with temperature at 36°. A few were stored in barrels without wrapping. On June 1st, 1898, the first examination was made, and

of those not wrapped 70 per cent. were decayed, of some wrapped in newspaper only, about 30 per cent. were decayed, while those with the double wrapping of waxed sheets and common paper remained in almost perfect condition as late as November 1st.

RUSSIAN APPLES have been very much decried in some quarters to the south of us as of little benefit to America. On the other hand we claim that much has been gained by the Budd-Gibb and other importations. Here is a list of valuable varieties which we owe to that country, viz.: Duchess, Tetofsky, Yellow Transparent, Longfield, Hiberna, Anisim, Charlemoff, Yellow Sweet, Regal.

BANDS FOR TRAPPING CODLING MOTH.—The following is a copy of an Order-in-Council approved by His Honour the Lieutenant-Governor, the 24th day of May, A. D. 1900.

Upon the recommendation of the Honourable the Minister of Agriculture, the Committee of Council advise that pursuant to the provisions of "The Noxious Insects Act" '63 Victoria, Cap. 47) the following regulations be made for the prevention and destruction of the Codling Moth:

1. It shall be the duty of every occupier of a lot within the municipality, or if the land be unoccupied, it shall be the duty of the owner of such lot, within one week after receiving notice as provided for in the Act, to place bands (as hereinafter described) upon the orchard trees located upon said lot, as follows: Upon all bearing apple trees and pear trees, and upon all orchard trees of bearing age within forty feet of such bearing trees.

2. The bands shall be made of "burlap" or "sacking," or similar suitable material, and shall not be less than four inches in width and of three thicknesses, and shall be securely fastened at a convenient point between the crotch of the tree and the ground.

3. The occupant or owner shall have these bands removed and inspected, all larvae therein destroyed, and the bands replaced at intervals of not more than two weeks during the months of June, July and August.

Certified, J. LONSDALE CAPREOL,
Asst. Clerk, Executive Council.

An attempt is being made to put these regulations in force in the Township of

Saltfleet, in Wentworth County, and we shall look with great interest for the results attained.

APPLE RAISING FOR PROFIT is the subject of an address lately given by Mr. J. H. Hale before the Massachusetts Horticultural Society. In his address he said:

"New England, as regards soil and climate, is better suited to the apple than other sections of the country. We can grow apples of finer color, flavor and texture in New England than anywhere else. The first thing necessary beyond soil and climate is to have good trees with perfect foliage from the beginning to the end of the season. Frequent and thorough tillage is necessary. Trees must have room enough for air and sunlight. Next they must have intelligent feeding. They need potash and phosphoric acid, with a moderate amount of nitrogen. Fungous growth will attack even the best cared for trees to some extent, so that spraying is essential.

"Let us first consider our old orchards. What can we do with them? Old trees should be pruned, and this should be done by a man of experience. Cut out all dead wood and some small branches. Don't try to do it all in one year; take two or three. If you do not want to plough your orchard, put on a top dressing and harrow. But if your orchard is to be devoted to apples alone, plough it and put on fertilizers. Scrape off all old, rough bark, and spray with a potash wash while the trees are dormant. Carry on the ordinary summer spraying for the codling moth, etc. If your land is rocky or rough, it may be mulched with any old material that is available—anything that will kill out the sod—but ploughing is better. You may pasture swine or sheep in your orchard, if you wish. I know of a man who has used an orchard of eight acres as a pasture for hens, and he is 50 per cent. ahead of the former owner, who made the same

orchard a hayfield. After cultivating a year or two, it will be necessary to thin out the fruit.

"You cannot have good fruit without thinning. If a young tree attempts to bear ten apples, pick off eight and leave only two to come to perfection, and you will have two fine specimens. The talk of an "off year" is nonsense. There should be no "off year." When the climatic conditions are such that the crop is ruined, the next year the trees will be so full that the fruit cannot ripen and at the same time form buds for the following year. By thinning off 75 to 80 per cent. every year you can bring the tree into the habit of annual bearing. Watch your trees closely and as soon as the apples are ripe pick them, even if it be August or September. Pack them at once in the barrels or boxes in which they are to be shipped, and place where there will be a good, even temperature. Grade according to size and pack honestly from top to bottom."

GILLETT'S LYE has been used at Maplehurst on rose bushes, both for aphid and rose hopper with marked benefit. We used one ten cent package to five gallons of water, which, in a few cases slightly burned the foliage, but wholly routed the enemy. We also used it with success to destroy the aphid on the cherry trees, applying it with Mitchell's atomizer, but it injured the foliage considerably.

KEROSENE is also used for destroying the insects above mentioned. The 10 per cent. solution is the proper strength in summer, made in the proportion of one gallon kerosene to ten gallons of water.

WHALE OIL SOAP used in the summer time where the foliage is out, should be used at the rate of one pound to five or more gallons of water. This will destroy the young of the San Jose Scale and Aphid.

IRRIGATION in fruit growing is the title of Bulletin No. 116, U. S. Department of Horticulture. After showing that the trees of the Citrus family require more water than our deciduous trees, he attributes three evils to insufficiency of moisture, viz.: Poor growth, poor fruit and intermittent bearing. Summer irrigation before fruit ripening of three acre-inches per acre after the early ripening fruits have reached good size and just before they begin the final swell, is claimed to reach the circulation of the tree in time to materially aid in the attainment of satisfactory size. More than this it also helps the tree to hold its foliage and growth the balance of the season. A large portion of the bulletin is taken up in explaining the various methods of utilizing irrigation water which we cannot enter upon here; for these details we refer our readers to the bulletin referred to.

FERTILIZING SELF-STERILE GRAPES is the title of Bulletin No. 169, by Prof. S. A. Beach, Geneva, N. Y., who has for several seasons been testing the self fertility of the grape. Many of our cultivated American grapes will not produce perfect bunches unless cross pollinated by some more fertile variety, and Mr. Beach has been seeking to find out the best varieties to use for this purpose. Detailed statements of the results are given with quite a number of varieties upon which experiments were made, and of these we give the instance of the Brighton, a self-sterile variety, fertilized by different varieties, the first five more or less self-sterile also, and the others more or less self-fertile. The illustration speaks so fully for itself that nothing more is necessary to prove the necessity of planting self-fertile varieties in our vineyards instead of large acreages of one variety, and in any degree of a self-sterile kind, such as Lindley, Salem, Barry, Merrimac, etc.

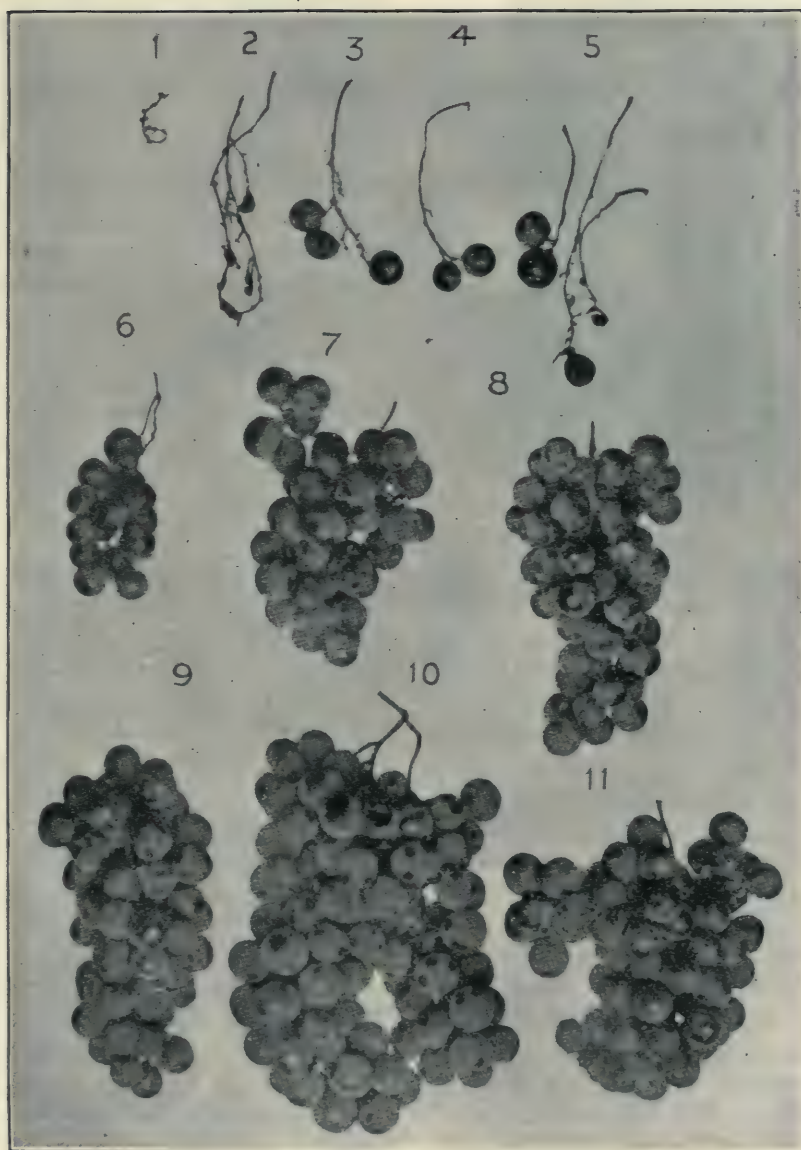


FIG. 1844.—BRIGHTON FERTILIZED BY DIFFERENT VARIETIES.

1. BY SALEM. 2. BY CREVELING. 3. BY LINDLEY. 4. BY BRIGHTON. 5. SELF-POLLINATED. 6. BY NECTAR. 7. BY JEFFERSON. 8. BY NIAGARA. 9. BY WORDEN. 10. BY VERGENNES. 11. BY ROCHESTER.

PROMINENT CANADIAN HORTICULTURISTS.



FIG. 1845. G. C. CASTON, CRAIGHURST.

It has always been the policy of our Association to search out the foremost fruit grower in each agricultural district as director for that district. By this means we have tried to secure as officers the best representatives of our industry.

No mistake was made when Mr. G. C. Caston was elected for Division No. 13. His excellent common sense; his long experience in growing and handling fruits, and his regular attendance upon our meetings have combined to make him one of our most valued members, whose judgment is always sought when important questions arise.

Mr. Caston was born in the village of Craighurst where he now resides. He began his Public School education at six years of age, and at fourteen was as far advanced as the teachers of those days. Having to make his own way in the world and not being able to get the benefit of a course at the High School, he worked at farming for several years. Having a liking for machinery he worked for several years at the milling business, but, finding his

health failing, he turned back to the farm. With an inborn love for horticulture he resolved to turn his village lot of five acres into an orchard, and soon planted it with trees. About this time he became a member of the Ontario Fruit Growers' Association, and he regards this as one of the most important steps in his life. Always a voracious reader and possessed of a retentive memory, he read all the horticultural literature he could get. The annual reports of the association had, for him, an absorbing interest, and he will always remember with warm feelings of gratitude Prof. Saunders, the late P. C. Dempsey, A. M. Smith and others, who were leading members of the Board at that time, and who contributed so much valuable information to the reports.

For several years, while his orchard was young, he grew small fruits between the trees. After a time he purchased the adjoining farm, and has now quite a large area planted to apples, pears, plums, cherries and small fruits, and which he is gradually enlarging every year.

In '94, at the request of the Board, he accepted the management of the Experimental Fruit Station for Simcoe County, his special-being hardy apples and hardy cherries.

On the retirement of Mr. Chas. Hickling from the Board of the Association Mr. Caston was elected Director for Division 13. This position he has held up to last year when he was elected Vice-President of the Association.

Mr. Caston has also been Secretary of the local Farmers' Institute since its organization, and has served as Secretary and Director of local Agricultural Societies, and his services as judge of fruit at the fall fairs is much in demand. He has a strong faith in the future of the fruit growing industry in Ontario as one of the most important industries of the Province.

QUESTION DRAWER.

The Bud Worm.

1163. SIR.—Would you please give me the name of enclosed grub found on the apple leaf, and what is best to destroy it?

Oakville.

C. W. MARTIN.

The larva sent to us by our correspondent is the well known Bud Worm (*Tmetocera ocellana*). Early in spring, when the buds begin to open, it eats out the centres of the buds and later webs together the leaves for self protection. The best remedy is to spray the infested trees with Paris green.

Apple Aphis.

1164. SIR.—What is best to do for a tree having lice on the bark of the limbs?

Oakville.

C. W. MARTIN.

The apple aphis, cherry aphis, rose aphis, etc., can be easily destroyed by spraying with whale oil soap, Gillett's lye, or kerosene emulsion early in the season, before the leaves begin to curl. It is best to make one strong application just before the buds open out.

Hybridizing of Cucurbits.

1165. SIR.—Will you please to answer the following questions in an early issue of your valuable monthly. Will the following hybridize or in any way lose flavor by being planted near each other, and, if so, how far apart should they be planted, viz.: Watermelons and citrons, watermelons and muskmelons, watermelons and cucumbers, muskmelons and cucumbers, muskmelons and pumpkins, muskmelons and squash, squash and pumpkins, different kinds of muskmelons? Also, if they do mix will the change be perceptible the same year or from the seed of that in the next year's fruit? When one has only a square plot and wishes to cultivate a variety it is well to know. Thanking you for past favors, I am yours truly,

Iroquois, Ont.

A. B. CAMERON.

The question of crossing and hybridizing of cucurbits is one about which there is a good deal of misunderstanding. The most systematic experiments along this line have been conducted at the Cornell Experiment

Station by Prof. Bailey, and results attained show that hybridizing is not nearly so frequent as is supposed.

Different varieties of the same species, such as one variety of muskmelon with another, or one variety of cucumber with another cross readily, but hybridizing, or the crossing of distantly related species, such as muskmelons with pumpkins, very rarely, if ever, occurs, although in more closely related species like the watermelon with the citron it is not unfrequent.

The effect of the cross, however, is not apparent the first year and shows itself only in the product of the seeds of the crossed specimens. In practice, therefore, all of these cucurbits may be grown side by side without injury or loss to quality in any of them. The seed from specimens grown in a mixed plantation should not be saved for future planting.

Guelph.

H. L. HUTT, O. A. C.

Wild Ginger.

1166. Will you kindly let me know through your magazine if the enclosed leaf belongs to the much valued ginseng root?

Fergus.

F. TOBIN.

The leaf which you send is that of the wild ginger (*Asarum Canadense*), a plant in no way related to the ginseng, which belongs to the *Aralia* family. Ginseng may be easily known by the following characters: The plant bears only one stem each year, on the summit of which are three leaves on long petioles, each leaf consisting of five petioled leaflets. From the point where the three leaves are borne at the summit of the stem, a small umbel of greenish white flowers is thrown up. Late in the season these flowers are followed by bright scarlet berries.

C. E. F., Ottawa.

J. FLETCHER.

Budding and Raising Cherries.

1167. SIR,—Please give instructions for propagating and growing cherries.

A SUBSCRIBER.

The growing of fruit trees is a comparatively simple matter, and many a farmer who desires to plant a large orchard and can with difficulty afford the expense of buying the trees, might raise a few hundred for himself.

Cherry trees are usually raised from the seed. The pits may be sown soon after being gathered, or if stored until spring they need to be mixed with earth and kept in a cool place. Every precaution must be taken to prevent the pits becoming hard and dry before they are planted, or they will not germinate. The second summer after sowing, the seedlings may be budded in the same manner as peaches, except that it must be done earlier, just when the bark lifts easily.

Usually the pits of the Common Black Mazzard are used as seeds, especially for raising stocks for the sweet varieties. For the Kentish and Morello varieties, and sometimes for the sweet, the Mahaleb is often used, a common variety from Southern Europe which is imported for sale. It is a slower grower than the Mazzard and has a tendency to dwarf the variety budded upon it.

The cherry may be also propagated by grafting, but as a rule this method is not employed by nurserymen for raising young trees.

Sweet cherry trees for orchard cultivation should be planted twenty feet apart each way, on dry sandy soil, well enriched and cultivated. Some people say that they need no cultivation and think the only place for them is in neglected fence corners, but this is an exploded notion. Three years of cultivation of a cherry orchard at Maplehurst has brought the trees into great vigor, size and productiveness, much sooner than trees of the same age in sod. The pruning knife needs to be applied with caution, for

the cherry tree seems to resent much cutting; but heavy pruning may always be avoided by the frequent and regular use of the knife or grape pruning shears. Limbs that cross should be removed, and long limbs should be shortened to encourage branching.

It is not well to plant too heavily of one variety unless plenty of pickers can be relied upon, for such small sized fruit requires many hands to gather it. One might cover the season for over a month with such a list as the following:

Sweet—Early Purple, Knight's Early Black, Governor Wood, Elton, Napoleon, Spanish, Tartarian, Elkhorn and Windsor.

Sour—Early Richmond, Montmorency.

Morello—Wragg and English Morello, Koslov Morello.

Gillett's Lye.

1168. SIR,—Please state in your next issue if the above article is any good, and oblige

AN AMATEUR.

This is simply an excellent brand of condensed lye, and a convenient form in which to purchase and handle the same. It is very strong and effective for destroying aphids and other soft bodied insects by contact with their bodies, which are burned up thereby. Before the foliage appears the trunk and limbs may be washed with a strong solution, and the result will be to cleanse the wood of both insect and fungi, and make it vigorous and healthy, a result similar to that obtained by the application of whale oil soap.

We have been applying Gillett's lye to our rose bushes in May and June for the destruction of aphids and rose hopper. We used a ten cent package to five gallons of water, and the result was quite satisfactory, although some of the leaves were slightly burned. It is very convenient of application with one of Mitchell's hand sprayers.

Kerosene Emulsion.

1169. SIR,—Please give a receipt for making Kerosene Emulsion. I have several, but cannot understand them, neither can I find any one around here who can. How many gallons, not parts of water, should I add to half a pound of soap, two gallons of kerosene and one gallon of water. When would you recommend spraying with this?

J. H. HELM, Port Hope.

In making Kerosene Emulsion we would advise using soft water for dilution. The formula referred to by our correspondent is Cook's, and is as follows:— $\frac{1}{2}$ lb. hard soap, 1 gallon boiling water, makes strong soap subs, and add two gallons kerosene while boiling, stir well and an excellent emulsion will be formed. From this stock solution a little may be taken at a time and diluted with soft water whenever required for use. In diluting it is usual to make the kerosene about 1-15th of the whole; so that if the whole of the stock solution were needed at once, thirty gallons of water should be added.

But different strengths are used according to the tenderness of the foliage, and to every quart of the three gallons of stock solution which you take out for use, you may add from 4 quarts to 25 quarts of water; the latter of course being a very weak solution.

This is very effective for aphids if used pretty strong. It may be applied at any time in the season, but for aphids it should be applied before the leaves are fully expanded and begin curling up, and for oyster shell book louse the best time is the first part of June, when the young lice are most easily destroyed.

Cranberry Culture.

1170. SIR,—I write to you to know if you can give me any information on growing cranberries. I have a swampy place which has deep muck, would that be the right kind of soil to grow them? Will you please let me know through your next journal the kind of soil, how to prepare it, how to get the plants, how long before they would bear fruit and if you would think it a profitable business. You will please let me know everything in connection

with the growing of them, as I know nothing about it myself. The place I have is covered over with grass and shrubs; water lies on it, but the muck always seems to be wet.

Orangeville,

WM. FOLEY.

Cranberry growing is not always a success. A large bog was made artificially at Walkerville, at very great expense, and has so far proved a failure. But where natural conditions are favorable, so as to reduce the great expense of establishing the plantation, they are usually profitable, for after the bog is once completed and the vines in bearing condition, the culture is simple and inexpensive. The *New England Farmer* gives the following instructions for preparing and planting a patch: A piece of low, swampy territory is selected to begin with. From this all the trees, bushes, or whatever growth may exist, are thoroughly cleaned out and the roots eradicated. Then the turf or dirt is taken off and the bog ditched and leveled. The old fashioned way of getting the level by the water and straight edge can not be improved upon for accuracy where the bog is well ditched. The level place is then covered with some four inches of coarse sand—some put on five—and the coarser the sand the better, if it will not interfere too much with the growth of the vines. The bog is then ready for the planting of the vines. The only fertilizer employed is to sometimes put a trifle of guano on the top of the plant, which works down through the sand to the roots of the vine. Three years must usually pass before the vines bear fruit, and they are generally not in bearing condition until the fourth year after planting. Some bogs on the Cape are still in good bearing condition that have yielded fruit for more than thirty years. Sometimes the vines are mowed down closely, but they come up again and bear more vigorously for cutting. The chief attention required is to keep down the weeds and rushes, which are usually not troublesome if not neglected, and to watch the enemies of the vines, the principal of which is what is popularly known as the fire worm. If they get in unobserved, a promising lot will be completely ruined in a few days, and they do their work so rapidly that they are well named the fire worm. Of late years they have been quite destructive. The remedy for them is a tobacco wash and it generally proves very efficacious if applied in time. The cost of producing a barrel of Cranberries all ready for market varies from three to four dollars a barrel of 100 quarts. It is safe to put down the average market value at \$7.00 per barrel.

Open Letters.

Grapes in Nova Scotia.

Grapes do not grow very rapidly. I have two varieties, the Early Amber and the Green Mountain, set two years. They have made a very poor growth. We have a great deal of fog during the summer. The soil is very shallow here, not more than ten or twelve inches, and is very heavy; holds water. The ground at present in our fields is about as soft as when frost first left the ground. Have had a great quantity of rain. Very little seeding done as yet; some have not any seed in ground. Have a lot of gooseberry and raspberry bushes. They seem to do well, with the exception of gooseberries, which break down badly in growing season, owing to rapid growth and being wet.—Yours truly,

ARTHUR C. SABEAN.

Rossway, Digby Co., N. S.

Fall Planting.

(SEE QUESTION 1156.)

SIR,—I have just received the June number of "Horticulturist," and wish to congratulate you on the constant improvement taking place in your valuable journal. This is certainly a very good number.

I, however, notice one great mistake, which I think would not be made if a little thought were given.

A gentleman writes, asking whether it would be best to buy his trees in the Fall, and bury, or wait until Spring. You simply say that it means extra work to get them in the Fall, and he should buy in the Spring. No nurseryman would give such advice, and we believe a nurseryman's advice on this point is better than the average planter's.

If it were possible to get trees just the moment you were ready for them, in the Spring, then it would be all right, but such is not the case with any nursery doing business of any amount. Especially is this the case with such seasons as the last. Frost held in the ground until nearly the middle of April, then it came very hot, buds were forced, and it was almost impossible to get stock out in good condition. Even working a big force from daylight until sundown, it will take at least three weeks to dig, pack and ship orders from any responsible nursery concern doing a good business. Then another week is sometimes added before stock

can reach destination, varying of course according to distance. This brought, this year, the delivery of trees in May instead of April.

Trees obtained in the Fall, as I know, when properly handled, either when buried or planted out permanently, were almost in full leaf before trees ordered for the Spring could possibly be delivered.

Even if a little extra work is necessary, if a man has his trees on hand in the Fall, he can plant just as early as the season will admit in the Spring, and he certainly has an advantage over the man who orders stock in the Spring, as a rule.

Then another point regarding the buying of stock in the Fall. Very few nurseries run out of varieties in the Fall, as the bulk of the business is done in the Spring. Those who buy in the Fall can always be sure of obtaining the varieties they desire, whereas in the Spring we are obliged to stop the sale of many varieties because they are sold out. It is impossible, always, to tell what varieties will be in demand. You cannot plant so as to always have the required number of each variety on stock, consequently if there is any shortage it comes on Spring sales.

I have watched this matter carefully for twenty years, and I find that getting stock in the Fall is more satisfactory to everyone in the long run.

There is less stock lost in the Fall, according to the number planted, than there is with Spring-planted stock.

There has been an unreasonable prejudice by many against getting stock in the Fall, mainly, no doubt, because they have to pay for the stock a few months before it begins to grow, but there are advantages that will certainly over-balance any objections that can be raised against buying stock in the Fall.

I believe, in most sections, stock can be planted out in the Fall, a little extra care being given to plant deeply and bank the trees six inches to a foot in height. This banking can be drawn away in the Spring as soon as the frost is out.

Very few people will take the pains to mulch in the Spring, and unless Spring-planted stock is heavily mulched there is much loss, especially when we get a dry season, as we have had this Spring. Trees will start, but the ground soon gets so dry that the young fibres cannot obtain nourishment and the trees go back.

The grumbler's rule is: "If trees fail in the Fall, blame the Winter; if they fail in the Spring, blame the nurseryman." The very opposite should be the case, if failure is ascribed to these causes.

In the Fall the nurseryman can send out stock in a perfectly dormant condition, and if it is at all properly handled I will guarantee that there is 50% less loss obtaining stock in the Fall than there is buying it in the Spring.

As nurserymen, we try our best to get the stock out at the earliest possible moment in the Spring. We are anxious to do this for several reasons, one of which is, we have our own plant-

ings to attend to, and that cannot be done until we have shipped stock to our customers.

Then again, we are anxious to get the business over and collections made, and there are other reasons which urge nurserymen to use all expedition, but in spite of all our efforts, it is impossible in all cases to get stock out as early as it ought to be, in the Spring, for successful planting.

I believe, too, that stock handled in the Fall will stand fumigation better than in the Spring. I am satisfied, at certain advanced stages, the fumigation is injurious to nursery stock.

Everything being considered, I think your view a mistaken one regarding obtaining trees in the Fall.—Yours truly,

Toronto.

W. E. WELLINGTON.

A Line From Mr. Burbank.

SIR,—Your esteemed note of March 8th and Report of Fruit Experiment Stations received. *I very highly appreciate the report.* It is an extremely valuable guide, and especially useful to me in guiding my experiments in the production of *hardier* fruits, which I have been pursuing for the past eight years as a specialty. I have no trace of scale in my grounds anywhere. It has wholly disappeared several years ago, and is now forgotten as a thing of the past. No doubt the Vedalia *Cardinalis* and other insect enemies have exterminated it *completely*. I shall be greatly pleased to have my new fruits grown there. Climate is one of the most promising for hardiness. Shiro and Sugar prune next; probably Sultan, also, may prove hardy. These fruits are a very great improvement on the ones first sent out, and will amaze fruit growers if they thrive there. My Paradox Walnut will not be hardy; Royal will be wherever the American Black is. I have no fresh stratified nuts of either now. Again thanking you for the extremely valuable report, I remain, faithfully yours,

Santa Rosa, Cal.

LUTHER BURBANK.

Fruit in New York Market.

SIR,—A few days ago I called at a first-class fruit store at the corner of Broadway and 28th street in this city and enquired the retail price of prime fruits. Easter Beurre pears were 18 cents each, or \$2.00 per dozen. They were as hard as stones, but soon ripen in a warm room. Size very large, and perfect in appearance; quality A1. Winter Nelis, prime every way, 15 cents each, or \$1.50 per dozen. Patrick Barry, large and very handsome, rich orange russett, same price. I have one to ripen weighing nearly a pound, without a blemish, price 15 cents. Apricots, 50 cents per dozen. Prime grape fruit, 60 cents each. Black cherries from California, best best 60 cents per pound; second quality, 30 cents. Best navel oranges, 10 cents each, or \$1.00 per dozen. Strawberries of best quality, 35 cents per quart. There were fine hot house grapes at \$2.00 per pound. Colossal asparagus, 50 cents per bunch; last year it was 90 cents. Long English cucumbers, grown under glass, 25 cents

each. There is no surplus of prime stock at these prices.

In some sections of California all boxes of oranges are the same size. The best contain 84 oranges. These retail at 10 cents, or \$8.40 per box. Next quality, 96 in box; 3rd quality, 120; 4th quality, 144. These retail at 2 for 5 cents and bring, as you will see, \$3.60 per box. The tree that bears the best fruit is not overloaded and is kept healthy.

The lowest grade comes from bad care, poor soil and over-loading. The market is glutted with this quality, but never with the best. Farmers fatten cattle by good care and feeding. Good fruit must have the same treatment. You cannot cheat a milk cow of food and care without loss of milk; nor a hill of corn; neither can you cheat a fruit tree. The largest profit is in the best quality, and the demand is unlimited.

Some prime Northern Spy, such as I have had at Oshawa, would retail at 5 and 10 cents each.

New York.

FRANCIS WAYLAND GLEN.

A Correction.

SIR,—In the April issue of the "Horticulturist" appears a letter over my signature in which I make certain charges against David Cantelon, apple dealer, of Clinton. I find that the statements I there made use of prove to be wholly untrue and unfounded. I now beg to withdraw and contradict them and to apologise to Mr. Cantelon for having made use of them. I believe Mr. Cantelon to be an honorable and fair-dealing business man. I had no desire to misrepresent or injure him, and my only excuse for making use of the statements I did is that I am very deaf and misunderstood what was told to me.

I desire to make what reparation I can, and you will oblige me by giving this communication the same publicity as you gave to my said letter published in April.—Yours truly,

Witness, W. Proudfoot.

WALTER HICK.

Goderich, May 31, 1900.

Crop Prospects.

SIR,—In looking through the orchards, I find there is a very good show of blossom on the cherry and plum trees. Pears very fair of bloom, some trees not much. Apples generally very good; some trees are very full, others have scarce any blossom. On the whole there is likely to be a very fair yield. The season has been very favorable both winter and spring.

Goderich.

WALTER HICK.

Pears for Market.

The varieties I would advise all growers to grow for home or foreign markets are as follows: Bartlett, Beurre Bosc, Beurre Clairgeau, Doyenne de Comice, Sheldon, and Beurre d'Anjou, if first worked upon, the Keiffer, to make them bear more prolific, as they are shy bearers. The Duchess d'Angouleme may also be added to this list as a dwarf tree, and Doyenne Boussock as a standard; also, Lawrence for winter.

R. CAMERON.

IMPORTANT TO WINE MAKERS—HOW TO MAKE CURRANT AND OTHER WINES.

THE currants should be perfectly ripe when gathered; they should be stemmed and washed before pressing, which must be done as thoroughly as possible with a 12-inch cider press. Ascertain the amount of juice thus obtained, and then add that amount of water to the same pumice and incorporate the water and pumice well together; let it stand a few hours and press it again. By this process an additional quantity of juice, though not so strong, is obtained; then mix the first pressing with the second and weigh a gallon of it, and whatever it falls short of 10 pounds to the gallon, add enough of good Havana sugar to make it weigh 10 pounds, and so on with the rest. I would here remark that an additional amount of sugar added to the above will make a sweeter wine, and perhaps more suitable to the taste of many. It would be rather an expensive business to those who have but few berries to make currant wine from the first pressing of the currant alone, as it requires one bushel of currants to produce a little over three gallons of pure juice. The red currant pure juice weighs $3\frac{1}{2}$ pounds to the gallon. The white currant pure juice comes almost within the winemaker's rule, weighing $9\frac{1}{4}$ pounds to the gallon. The way in which I make currant wine is to use the pure juice alone, or without much water, and I find that I can readily command \$3 per gallon for it, whereas the other would be dear at \$1 per gallon, and not much of a wine at that. Elderberry wine is made in the same way as first stated, adding about half water in the way of repressing the pumice, etc., as if it is made without the addition of too much sugar it resembles claret very closely. Black currant wine is made in the same way as the

elderberry, only the berries should be scalded before pressing, and if carefully managed in the fermentation will resemble the Rhine wines. When the juice, sugar and water are well incorporated by stirring together until the sugar is dissolved, it is then placed in an open tub in a temperature of about 60° F., there to stand a few days until the froth and impurities rise to the surface, which must be removed as often as it accumulates, and when the liquid becomes limpid and somewhat transparent, then it is placed in a clean barrel to within 5 or 8 inches of the bung. A rubber tube passed through a cork which fits the bung-hole, and kept air tight with wax, is then inserted into the bung about two inches, the other end passing into a pail of water to the depth of 3 or 4 inches. This is done to prevent the oxygen of the air penetrating the fermenting mass, and also to retain much of the finer aromatic essences which are so essential to fine flavored wines.

A great advantage is also gained thereby in rendering it less necessary to keep watch over the fermentation as pursued by some in keeping the barrel bung full by replenishing with some of the same standing near at hand, which becomes pricked before fermentation has ended, rendering it in the end little more than sweetened vinegar. No admixture should be attempted after fermentation has commenced, and if the temperature of fermentation is kept at about 60° or 65° F., for about six weeks or two months, it will be ready to remove the tube and fill the barrel bung full of the same, made in a separate vessel for that purpose. Then put the bung in moderately tight for a few days, and after that drive the bung in tight until about December, when it must be racked off

from the lees, the barrel rinsed with hot and cold water, and when drained quite dry insert into the bunghole a small cup, suspended by a wire, containing one ounce of spirits of wine or alcohol, ignited, and kept there until the barrel is well fumigated; the bung must not be closed. Then return the wine again and keep it there for three months, when the same process is repeated. If it is done a third time it will be all the better. It is now finished, and can be kept any length of time either in bottles or wood, slowly improving by age.

Grapes may be made into wine in the same way as first mentioned above, with this difference—that when the pumice is to be repressed, that sugar dissolved with grape juice (by heat) must be added to the water that is mixed with the pumice, and to stand a few hours before the second pressing. It must contain the same proportion of sugar and water as is found in the natural juice of the first pressing, all of which is mixed well together and fermented as above. But if

the grapes are left on the vine until they are quite ripe, say until they have received the effects of a white frost, and carefully selected, the good from the bad, and thoroughly pressed and fermented as above, without the addition of either sugar or water, you will have wine that *is* wine. It is true we cannot have so great a quantity of juice, but what there is, is good.

P. S.—The object of the fumigating process is to prevent undue fermentation. The same effect is obtained in putting a 1,000th part of powdered mustard into the wine; but how it acts is unknown.

This article would be incomplete if I omitted to give your numerous readers Pasteur's method of preserving wine indefinitely by heating it to so many degrees; it then possesses all the virtues of old wine. But as this article is lengthy, I will defer it for a future number of *The Horticulturist*.

F. W. PORTER.

Mt. Forest, Ont.

A STANDARD APPLE BARREL.—Believing as we do that the barrel as a package for apples, potatoes, etc., will never pass away, it is most important that the Dominion should settle upon a uniform size—a size that would be acceptable for the whole continent. The present legal apple barrel in Canada is of the following dimensions: Staves, from croe to croe, 27 inches, or about 30 inches long; head, 16½ to 17 inches, as nearly cylindrical as may be. A recent proposed statute to come in force July 1st, 1900, calls for a barrel of nearly the same dimensions, viz: Staves, croe to croe, 27; head, 17; bilge, inside measure, 19. Since this statute was framed the American Apple Shippers' Association have agreed to buy and sell apples in barrels of

which the measurements are as follows: Staves, 28½ inches long; head, 17¼ inches; circumference, or bilge, 64 inches. This barrel will hold only 96.51 imperial quarts, dry measure; while the barrel proposed to be adopted July 1st contains 103 imperial quarts. The United States quarts are smaller than ours, so the former barrel would contain an even hundred of them, and is known there as the one-hundred-quart barrel. The same barrel would hold 174 pounds of potatoes, an important product of Nova Scotia, which that Province would desire to export to the United States. For these and other reasons the Nova Scotians are most anxious for the adoption by the Dominion of the 100-quart barrel.



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PAN-AMERICAN EXPOSITION, 1901.

HORTICULTURISTS have abundant reason to feel a lively interest in the great Pan-American Exposition to be held in Buffalo in 1901. In the embellishment of the grounds the architects have planned to use trees and shrubs, foliage and flowering plants in quantity to dazzle the lovers of fine horticultural displays. The extensive area of the Exposition grounds affords abundant room for the elaborate pageantry of color that is here contemplated. There are nearly 350 acres in the Exposition site, of which about one-third are the improved lands of Buffalo's beautiful Delaware Park. Upon the park lands many thousands of dollars have been expended from year to year in the past in maintaining and improving the variety and display of rare shrubs and trees. This portion of the landscape includes a park lake of irregular shape. It is charmingly picturesque when the shores are clad in their summer garb of foliage. This part of the park will receive special attention in preparation for the coming Exposition.

Lying directly north of the park lands and upon a higher elevation is the remainder of the Exposition plot. Included in the plan for the arrangement of the buildings is a magnificent court 3,000 feet long, with a

traverse court 1,700 feet from east to west, besides subordinate courts. All of these open spaces are to be beautified with palms and other tropical plants in tubs and vases, placed near the surrounding buildings and beside the fountains and pools. To these will be added sunken gardens of elaborate arrangement, and formal flower beds wherever their presence will enhance the beauty of the courts. The various buildings of the Exposition are to have red-tiled roofs, and the walls are to be tinted in a variety of colors so that the brilliancy of the architectural works will vie with the blossoming beds to fascinate the lovers of fine color effects. Among the flowers and foliage plants will be many sparkling fountains to enliven the beauteous scene. The water features of the Exposition include a grand canal more than one mile in length, which completely encircles the main group of buildings. Lagoons with sodded banks and shaded with a variety of trees shoot off from the main canal at various points and add their beauty to the landscape effect. The entire outer wall of the Exposition grounds is to be a bank of solid foliage. Many thousands of trees, shrubs and cuttings have already been planted in preparation for the elaborate horticultural features. Large trees, which fortunately

were already upon the Exposition site, have been preserved by transference to places where their stately shafts of green would heighten the color effect in contrast with the brighter hues of the buildings.

The building to be devoted to the Department of Horticulture, of which Mr. F. W. Taylor is chief, is 220 feet square. It has two arcaded wings sweeping from the north and south facades to the eastward and connecting with other buildings to form a semi-circular court. West of these arcades are the conservatories, in which will be displayed the palms and other plants of tropical origin. The arcades leading from the main building will be kept gay the entire season with flowering and ornamental plants. The large building will be used for the display of fruits and various other exhibits pertaining to horticulture. It is expected that the state of New York will spend at least \$10,000 in aiding the horticultural societies of the state to extend and replenish their exhibits during the season of the Exposition. The Horticultural Building will be one of the most picturesque of the entire group of large Exposition buildings. The loggias which form the eastern entrance will be richly adorned with frescoes. Two of these compositions will represent Ceres, the goddess of the harvest, bearing in her arms a sheaf of wheat, her chariot drawn by three lions led by Flora and Primavera.

The exhibits to be made by the leading florists of the United States will be situated south of the Horticultural Building. To these displays some six or seven acres of land will be devoted. William Scott, of Buffalo, a prominent florist and well-known contributor to literature upon flowers, will have charge of the floral exhibits. Several prominent horticulturists have already entered for the competition of 1901. In these displays there will be over 500 beds, in which will be shown every popular flower known, from the low-growing verbena to the stately

dahlia and hollyhock. There will be large exhibits of hardy perennial plants, such as Delphinium and Helianthus, Phlox, Tritoma and other leading hardy flowers. Of the hardy annuals there will be many examples of choice varieties that do so well in our summer months. There will be numerous specimens of the summer climbers, conspicuous among which will be the new varieties of the gorgeous Clematis. The water gardens, of which there will be a number in various parts of the grounds, will be important and attractive features which will include in their displays besides the mammoth Victorian Regia of the Amazon and the Nilumbiums of the Nile, many Nymphaeas never before exhibited. When at their best there will be special exhibitions of roses, dahlias, gladiolus, sweet peas, chrysanthemums and other peculiar flowers. Exhibits from all the large growers of the country are assured.

Horticulture has made wonderful strides within a very few years, and many of the floral specimens which will be seen at the Pan-American Exposition were not in existence at the time of the World's Fair at Chicago. The displays of the now popular canna will surpass anything yet seen either in America or Europe. One may therefore confidently expect this Exposition to be, from the view point of the horticulturist, the most brilliant ever held.

The gates of the Exposition will be opened on May 1, 1901, and closed on November 1 of the same year, giving six full months for the enjoyment of the wonderful displays there to be assembled. The buildings of the Exposition comprise more than 20 large architectural works, and the smaller buildings are numbered by the hundred. The largest of the buildings are those devoted to Machinery and Transportation and Manufactures and Liberal Arts, each covering about four acres. The Agricultural Building will cover nearly two acres, and the Electric-

ity Building the same. The Main Government Building is 600 x 130 feet, with a dome 250 feet above the main floor. The lesser buildings of the group are each 150 feet square, connected with the main structure by curved arcades, the three structures enclosing a semi-circular court which opens to the west. The Ethnology Building and the Temple of Music are each to be about 150 feet square. The Stadium, or sportihg arena, with the ornamental buildings which forms the entrance, will cover about 10 acres. It will have a seating capacity of 25,000 people, and will contain a quarter-mile track and abundant room for all the modern athletic contests. The live stock display will cover about 10 acres, and to the "Midway," or pleasure ground, about 20 acres have been allotted.

The Electric Tower, which is to stand in a broad aquatic basin, will be 348 feet high, the main portion of the tower being 80 feet

square. The position of the tower is between the Agricultural and Electrical Buildings, dividing the Court of the Fountains from the Plaza, and it will be the centerpiece of the Exposition. It is intended to have the electric displays the most elaborate ever undertaken. The nearness of Niagara Falls makes this possible, on account of the unlimited power developed from the great cataracts and transmitted to Buffalo by means of large copper cables. It is expected that between five and six million dollars will have been expended on the Exposition buildings and grounds before the installation of exhibits begins. The work of preparing for this great, All-American display is proceeding with commendable speed and system, and the plans are such that it will be completed in ample time for the opening of the gates on the date announced.

MARK BENNITT.

THE Bosc pear is rather gaining in favor, especially as a shipper. A writer in the California Fruit Growers' Journal says of it: The Bosc pear will never be a glut in the market, for the reason that the tree grows so crooked and slowly that nurserymen will not grow it. Those who buy trees, says Edwin Hoyt in Rural New Yorker, do not understand that there is as much difference in the habit of growth in trees as there is in animals, and are not willing to pay any more for one tree than another of the same species. If a nurseryman were to bud 1,000 stocks to Bartlett he would, no doubt, get 900 good trees, while if 1,000 stocks were budded to Bosc, he might not get more than 100 good salable trees, and many of these might have to be staked while growing to get the body up straight so as to make a tree a customer would

receive if sent to him. Many nurserymen grow a few Bosc by top-working them, that is, by budding the Bosc in the top of some strong-growing variety like Clapp, Buffum Anjou. To raise the trees this way, the nurseryman has to charge more for them to pay him for his extra trouble. If one wishes to obtain a Bosc pear orchard, the best way to get it is to set Clapp or some strong-growing variety. Let it grow two years, then top-graft it. This, of course, is some trouble and expense to do, yet the one who does it will get a good paying pear orchard, for this variety will never be overproduced. It is a fine pear, a heavy bearer, and usually grows smooth and fair with good feeding and cultivation, such as any orchard should have for profit." Our plan at Maplehurst is to grow Keiffer as stocks and top-graft them with Bosc.

OUR BOOK TABLE.

MODERN HOUSE PLANS FOR EVERYBODY.—For village and country residences, costing from \$250 to \$8,000, including full descriptions and estimates in detail of materials, labor, cost, and many practical suggestions. By S. B. Reed architect. Illustrated, 12mo, pp 243. The Orange Judd Company. Price, postpaid, \$1.

From its first appearance, House Plans for Everybody has occupied the first rank among architectural books. The plans comprise almost every variety of arrangement and style; each one is accompanied by a detailed description of its convenience and construction; and its cost is shown by careful estimates, made to correspond with a uniform standard of prices at present rates. So carefully have the standard features of home buildings been considered in the original edition that there was but little need to change the text, or floor plans. In the matter of outward dress, however, nearly all the elevations have been redrawn, with special regard to modern ideas and tastes and in this respect it is especially invaluable.

ANNUAL REPORT of the Fruit Growers' Association of Nova Scotia, 1900. Annual meeting at Wolfville, Jan. 29th, 30th and 31st. S. C. Parker, Secretary, Berwick, N. S.

THE SAN JOSE SCALE and other scale insects prepared for the use of fruit growers and scale inspectors by Wm. Lochhead, B. A., M. S., O. A. C. Guelph. This is a most valuable bulletin, well illustrated with original drawings. It may be had free on application to the Ontario Department of Agriculture, Toronto.

A TREASURY OF CANADIAN VERSE, selected and edited by T. H. Rand, D. C. L., Toronto. An invaluable collection. Price only \$1.25.

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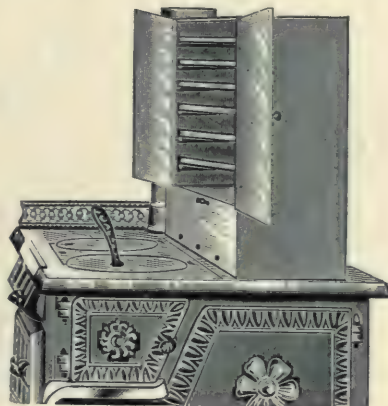
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Georgian Bay District, J. G. Mitchell, Clarksburg	poor	...	very poor	very good	good	poor	...	very poor	very good	very good	
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Grenville Co. H. Jones, Maitland	fair-good	good	good	...	fair	very good	good	
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FIG. 1857. FRUITING BRANCH OF REINE HORTENSE CHERRIES.

Photo. by Miss Brodie.

THE CANADIAN HORTICULTURIST



** AUGUST. **

CHERRIES IN 1900.

THE first of the tree fruits to ripen is the cherry, and its comparatively small size renders its harvesting quite a serious consideration, especially if the acreage is large. A solid block of cherry trees planted for profit is not often seen for this very reason, but where plenty of pickers are obtainable in cherry season, there is no reason why such a block should not be planted.

Fig. 1858 shows a view in the experimental plot at Maplehurst five years planted. These trees are on dry sandy loam, have been given clean cultivation and fertilized with wood ashes. The result of this treatment proves the absurdity of the common notion that the proper place for cherry trees is the fence row, and that cultivation is unnecessary. They have grown with double the vigor of trees not cultivated, many of the sweet cherry class being over 14 feet in height and 4 inches in diameter of trunk; also at this early age many of them are well laden with fruit. One of the Early Purple trees, a variety not usually very productive, has so responded to our treatment that it has been fully loaded now for two years in suc-

cession, but, ripening early in June, it is usually harvested by birds and boys.

The total number of varieties under test at Maplehurst is 62, and the different habits of growth are an interesting study. For example, Fig. 1866 shows a Morello tree a good type of the habit also of the Kentish cherries, for these differ from each other more in fruit than in tree; this class of trees forms a round head with slender branches and never attains much height. These five-year-old trees are only about 9 feet in height and 3 inches in diameter of trunk. The Montmorency is a great favorite as a market cherry in New York State, and certainly is a productive kind of pie cherry, far less subject to Curculio than the old common red. It ripens about the 1st of July, while the Early Richmond can be used for pies about the middle of June. For pies, the Early Richmond, Montmorency and Wragg or English Morello, would cover the season completely. Fig. 1859 and 1860 shows the bearing habit of the Empress Eugenie and of the May Duke, two varieties of Dukes which so nearly resemble each other that they are not

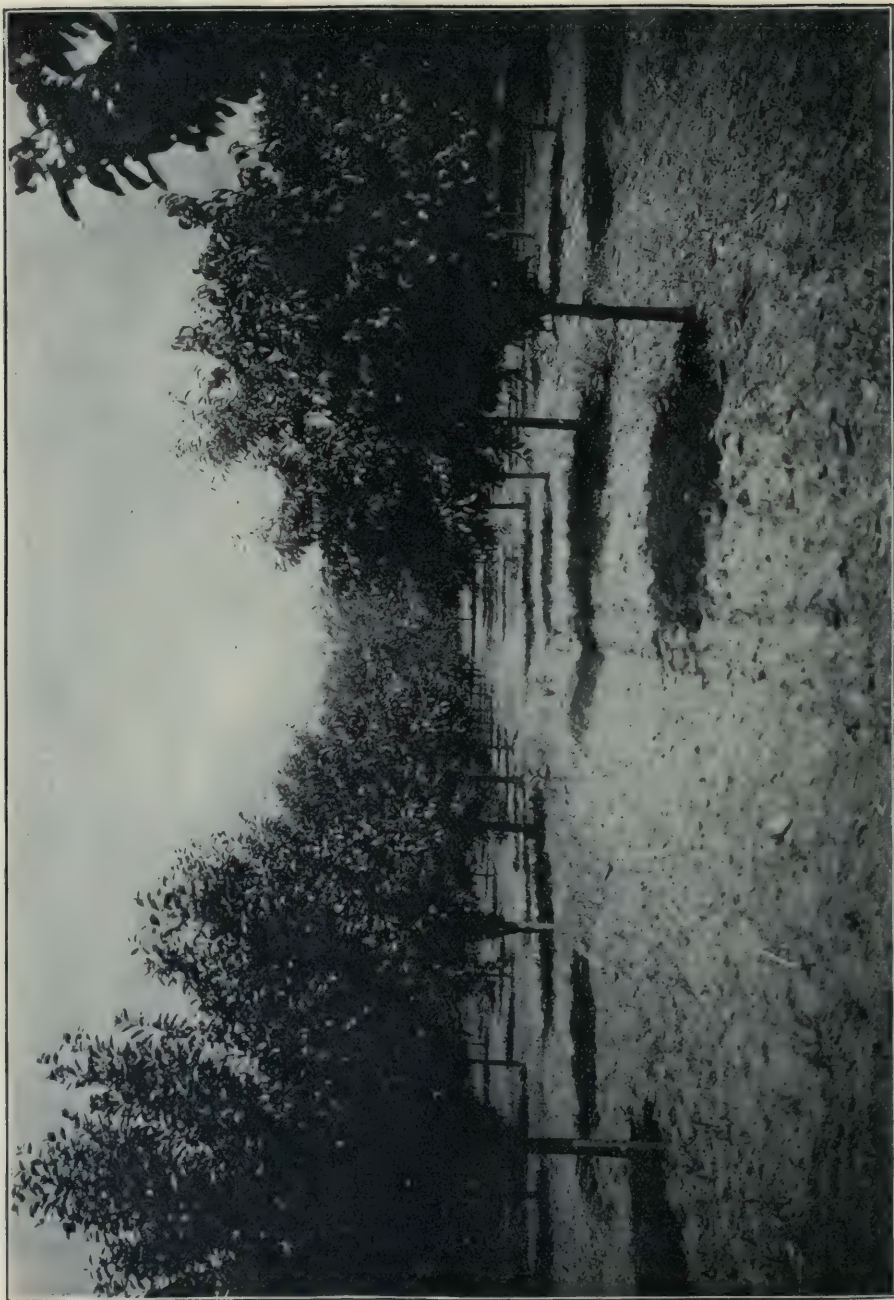


FIG. 1958. MAPLEHURST CHERRY PLOT, FIVE YEARS PLANTED.

Photo. by Miss Brodie.



FIG. 1859. EMPRESS EUGENIE (REDUCED.)

easily distinguished. Both bear in thick clusters all along the branches, and their mild acid makes them more desirable for pies than the Kentish varieties, at least to the taste of many people. They have one fault,



FIG. 1860. MAY DUKE (REDUCED.)

viz., that of uneven ripening, often showing very green samples and very ripe ones on the same bunch. The Duke cherries may



FIG. 1861. BEARING HABIT OF CLEVELAND.



FIG. 1862. BEARING HABIT OF ELTON.

well be classed separately from all others, and Fig. 1863 shows a good type of the tree. This is a May Duke in our experimental plot, but the Royal Duke, Late Duke and the Empress Eugenie are so similar in habit that one tree will well represent them all. They grow upright and attain a con-



FIG. 1863. MAY DUKE TREE AT MAPLEHURST.



FIG. 1864 BEARING HABIT OF SWEET CHERRIES



FIG 1865. SWEET CHERRY TREE.



FIG. 1866. MORELLO TREE.

siderable height with little spread of branches. The leaves hang down in somewhat fastigate habit, and the fruit is borne all along the branches, well hidden among the leaves. The Reine Hortense is by far the finest Duke, but is so different in habit and so immensely superior in size and appearance to the others named, that it cannot be called a typical Duke ; indeed all these divisions are more or less arbitrary and shade more or less into each other. Fig. 1857 shows the bearing

habit of this variety ; the cherries do not hang in bunches, but in ones and twos, an excusable fault in a cherry so large and fine as this one is.

The members of the Board of Control of our fruit stations visited our Orchard on the 3rd of July, and the general verdict was that the Hortense with its load of fruit, was alone worth a journey to see. Our frontispiece, from a photograph by Miss Brodie on the 6th of July, well represents a fruiting branch

from one of these five year old trees, and will give our readers a good idea of its productiveness this season. The fruit is too soft for long shipments, but for the amateur we know of no equal to it for cooking purposes.

The bearing habit of the sweet cherries is shown in Fig. 1864, which is a photo of Governor Wood. These trees are very vigorous, upright and spreading in growth and form very largetrees. (See fig. 1865.) Governor Wood and Cleveland very much resemble each other and are of the same origin, but of the two, we think the latter is the finer cherry, both in beauty and in flavor. Fig. 1862 shows a branch of Elton cherries from one of our five year old trees and for productiveness it certainly leaves nothing to be desired, while Fig. 1861 shows a bunch of Cleveland. Hearts and Bigarreus are both included under the Sweet Cherry class, and the latter are much the more productive. The Black Tartarian well represents the former, while the Napoleon Bigarreau is a good example of the latter. These often overload and rot badly from contact with each other in wet seasons unless sprayed after every rain with Bordeaux mixture.



FIG. 1867. SHOWING THE BEARING HABIT OF ROYAL DUKE.

PRUNING.—In the pruning of pyramidal fruit trees of all sorts care should be taken to encourage the formation of natural fruit spurs in preference to artificial ones; this is the rock on which many a young gardener and amateur has split by following the orthodox system of summer-pinching, as it is called. If a free growth is allowed during the summer and the branches kept thin, admitting the free circulation of sun and air among them, the wood will ripen properly,

and at the base of every leaf a bud is formed which will ultimately become a natural fruit spur. In the case of some varieties, such as the Jargonelle and Williams' Bon Chretien Pears, it will be found that the terminal bud of one year's growth will be a fruit or bloom bud; in such a case it will be advisable to pinch it out, which will strengthen the side buds, and in the following year they will become natural fruit spurs.—*Journal of Horticulture*.

A DOUBLE TRAGEDY.

Down from a twig on a Northern Spy tree
A canker-worm swung in security;
He'd eaten all season since first he was hatched,
As a ravenous glutton he couldn't be matched.
He slipped inch by inch to the grass-covered
ground,
Where he thought safe concealment might surely
be found
In which he could pupate till autumn set in;
But a hen came that way and she gathered him in.
Gathered — gathered — gathered — she gathered
him in.

She gathered him in, and his final rest
Was there, in there, in her well-filled chest;
And she strolled around in search for more,
For it tasted better than aught before.
But I thought of her end, her final act,
When the farmer'd slice with a carver's tact,
And remark, as each piece made him look less
thin,
"I gather her in, I gather her in.
Gather—gather—gather—I gather her in."

—*Am. Agriculturist.*



FIG. 1865. REINE HORTENSE TREE.

UNIQUE FLOWER STANDS AND POTS.

THE ordinary flower-pot has been taken so much as a matter of course that few persons think of using any other receptacles for the plant growths with which they adorn their homes. Yet it is possible to utilize various articles common to most households and at the same time produce something appropriate to the flowers or plants that are put in them.

These holders, which are easy of construction, may, to a certain extent, take the place of the jardiniere that is now so common.

The Japanese have devoted much time and shown great skill in the arrangement of plants and flowers. They offer good examples of what may be done with a single plant or a few flowers. The results they obtain are artistic and compel admiration. It is often desirable to move plants from one room to another, or to use a single plant for a decoration; the various devices shown in the drawings (with one exception) may be very easily moved.

A hanging arrangement for flowers is shown in Fig. 1869. It is odd and effective, and well worth the slight trouble and expense incurred in constructing it. A carpenter's assistance may be needed for this, and for some of the other designs, but all may be made by a trifling cost.

A child's hoop is used for the han-

dle. It passes through two pieces of three-quarter-inch stuff cut two inches wide, that are in turn nailed to two wooden towel rings, one above the other, eight inches apart. A circular piece of wood is fitted into the lower ring, and light strips of wood are tacked on, the whole forming a basket in which the pot is placed. Vines are planted and trained up and around the hoops.

Fig. 1870 is intended as a substitute for the fern dishes of silver that grace the dinner-table. This is the ordinary round wooden spice box known to many housekeepers. It is painted a pale cream tint, and when filled with growing ferns is quite as good in effect as the silver dishes, which, to my mind, always seem a trifle cold and metallic for flowers and plants. A Japanese stand gives style to this arrangement, which might otherwise be deemed quite commonplace.

This stand may be stained a dark sienna or ebonized. It should not be over three inches in height, as the plant must not be



Fig. 1870.



Fig. 1869.

over three inches in height, as the plant must not be allowed to interfere with the view of one's neighbor across the table and thus form a decided hindrance to sociability.

The design in Fig. 1871 is easily constructed and is unique in effect. It consists of a deep wooden bowl, supported by a stand built of laths nailed to a hoop of the same circumference as the rim of the bowl. It is about two feet in height. A vine is allowed to fall over and twine in this frame, breaking somewhat the rigidity of its lines.

This idea may be used also for potted plants, which could then be removed at will. In constructing it for this purpose



Fig. 1871.

omit the wooden bowl and simply use a hoop at the top like the one at the base, having it of a diameter a trifle less than that of the pot so that when placed in it the rim of the pot will project a trifle above it.

Another plan would be to again dispense with the bowl, and use a round, flat top of wood for the plants, thus producing a very convenient little low table which would prove especially attractive for the porch. It must, of course, be neatly finished and painted.

Fig. 1872 is designed as a receptacle for cut flowers rather than



Fig. 1872.



Fig. 1873.

for growing plants. It consists simply of an ordinary tin biscuit-can, cut as indicated and painted. It may be partially filled with earth, or weighted in any other way to insure its stability. When in use it may stand on a tile or mirror.

It is Japanese in form, and if care is used in the arrangement of the flowers a rather quaint effect is produced. It is well to use sand at the bottom of the vase for inserting the stems of the flowers, as this will assist materially in arranging them. Such blossoms as the aster, daisy or chrysanthemum may thus be used.

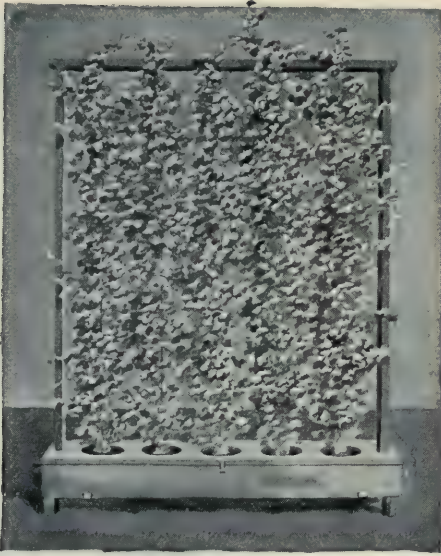


Fig. 1874.

The design shown in Fig. 1873 is intended to be bracketed against the wall. Two semi-circular pieces of wood, half an inch thick and fourteen inches on the diameter, are fastened together twelve inches apart by thin strips of wood woven in and out in basket effect. A circle is cut in the upper piece, allowing a flower-pot with growing plant to be set in.

Through these two pieces, on each side, are run fruit-pickers, used by farmers for gathering fruits. The handles are cut to the proper length. The wire cup is used to clasp a goblet from which the stem has been broken. A small flower-pot may be used if preferred. From these cups vines may be trained.

The screen in Fig. 1874 stands three feet six inches high and is three feet wide. The box in which the pots are placed measures eight inches from front to back and seven inches in depth. It stands on short legs, or it may be put upon casters for convenience in moving around. The front of the box opens on a hinge at the base, allowing for the removal of the plants when desired. Wires are stretched from top to bottom for

the vines to twine upon. The screen has a very charming effect. It stands firmly, as all the weight is at its base. It may be easily moved, thus allowing it to be used as a back-ground for brilliant blossoms. Several of these screens placed side by side would be very effective in banking up the side of the room when special floral decorations were needed for any festive occasion.

Of course it is not necessary to adhere strictly to the lines and dimensions of the screen illustrated. Several other forms less severe in outline suggest themselves. A curved top may easily be produced by carrying up a hoop from the top at either side. A hoop also may be hung inside of the frame with good effect, allowing the vines to climb around it. If one objects to the boxed-up pots at the base this objection may be easily overcome by substituting a board and cutting round holes in it a trifle less in diameter than the diameter of the pots. The board should be set on a frame sufficiently high to allow the pots to clear the floor.



Fig. 1875.

In Fig. 1875 is shown a simple fruit-basket smoothed up and treated to several coats of paint. A hoop of appropriate size is nailed securely to its rim. This is so bent to harmonize with the lines of the basket, and besides affording a decorative feature, is useful as a means of lifting the plant. In painting these holders select such colors as will not offend good taste. Warm tints are the best, as they afford a pleasing

contrast to the foliage of the plant. Rich dark browns, dull reds, or pale cream tints are good and effective, yet quiet and restful to the eye. The basket is set on a light stand of polished wood, quite Japanese in design. Though very simple in construction, it gives distinction to the plant, and is a protection to the carpet or table on which it rests.—*From the Ladies' Home Journal*, copyrighted by the Curtis Pub. Co., Phila.

CARNIVOROUS PLANTS OF CANADA.

*Facilis descensus Averni,
Sed revocare gradum.*—VIRGIL.



ALTHOUGH to the horticulturist as a commercial grower, flesh consuming plants may not be of special interest, yet as a student of plant life a brief account of how some plants obtain nitrogen may be to him both interesting and valuable.

Those that will be mentioned fall naturally into two groups, the one composed of those that capture by means of closed chambers or open pitfalls, so contrived that animals entering may not be able to get out. In some instances the pitfalls are made attractive by a display of brilliant color, and the downward way alluring by a spread of sweets. It is in a more enticing way the old story :

"Walk into my parlor said the spider to the fly,
I've the prettiest little parlor ever you did spy."

The other group consists of those that perform certain movements specially designed to secure their prey.

There is a third group, to it belong plants the leaves of which are provided with glands that secrete a sticky substance to capture insects and fluids to digest them. Some Canadian plants have sticky foliage, but the writer is not aware that it has been ascer-

tained that any of them can digest the insects that may chance to adhere to the leaves.

The first group is represented in Canada by five species of bladderworts, which illustrate the closed chamber contrivance and one species of pitcher plant which uses the pit-fall method. Of the bladderworts, four species live in ponds or pools in bogs, one roots in mud. The aquatic species have no roots, they float just below the surface of the water, throwing up only flower stalks with their yellow flowers into the air. See Fig. 1876, copied, as are all illustrations in this paper, from the *National History of Plants* by Anton Kerner, Professor of Botany in the University of Vienna.

The life story of these plants is as follows : In the autumn spherical buds are formed at the ends of the branches, the leaves and old parts die, become saturated with water, sink to the bottom, taking of necessity these buds with them, where they remain all winter. On the return of growing weather these buds increase in size, become separated from the old decaying branches, ascend to near the surface and soon develop into a plant similar to that shown in Fig. 1876 with leaves and bladders. In some

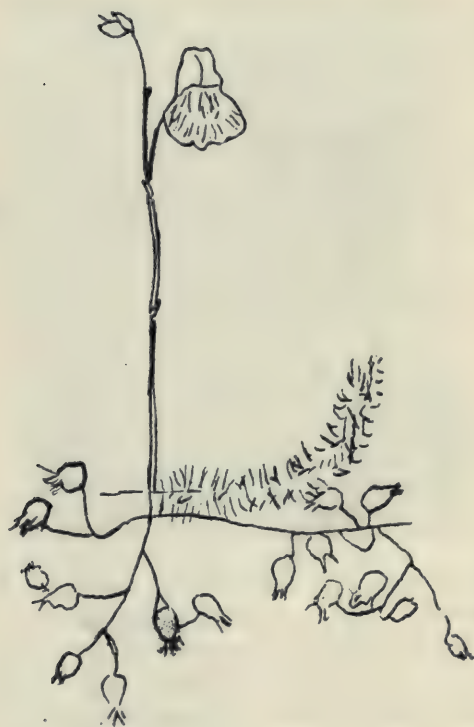


FIG. 1876.

of the species all of the branches are supplied with leaves, the bladders being distributed among them ; other species have the foliage and bladders on separate branches.

The bladders are constructed in such a manner that each is a trap specially designed to catch very small animals. Their form and general appearance is shown in Fig. 1877, considerably magnified. The opening into the bladder is at the base of the stiff tapering bristles, which are so placed around it as effectually to prevent any other than animals small enough to enter the orifice from even approaching. The entrance is formed with four rounded angles, nearly square in outline. The under side or threshold is strongly thickened, from which a solid cushion projects inward. To the upper side or lintel, is fastened a thin transparent valve which closes upon the cushion, completely shutting the aperture. The valve is so elastic that

it can be easily pushed up by the tiniest animal on the outside and so get within ; as soon as it has entered, the valve instantly springs back to its normal position, and the venturesome prisoner is a captive for life. Over the entrance might most truly be written,

" Who enters here leaves hope behind."

See Fig. 1878 showing in outline the cushion and valve magnified. Sooner or later the captives die and decay. Lining the interior surface of this prison house are cells specially

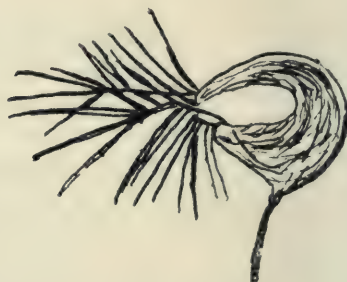


FIG. 1877.

designed to absorb the products of this decay, which thus become a source of nitrogen to the plant. We learn from Kerner that the number of animals thus captured is comparatively large, that most of them are small crustaceans, supplemented by larvæ of gnats and other small insects. That they must need be small, is evident from the fact that the bladders themselves do not exceed 5 millimeters in diameter, about one-fifth down to one-twelfth of an inch. What is it



Fig. 1878.

that induces these tiny members of the animal kingdom to press open the door, as it were, force an entrance into this death trap, is as yet an unsolved riddle. Mr. Kerner suggests that it may be to escape being drowned by larger predaceous inhabitants of the pool. Certainly none ever come back to warn their fellows.

We give for those who may desire to examine these curious plants a brief account of the few species indigenous to Canada: flowers yellow, one petaled, two lipped.

Utricularia vulgaris, the greater bladderwort; bears numerous bladders interspersed among the leaves, from 3 to 20 flowers, found from the Atlantic to the Pacific.

U. intermedia, Flatleaved bladderwort; the bladders with rare exceptions are borne on leafless branches; flowers 1 to 5, reported from Newfoundland, New Zealand, Quebec, in Ontario, from Ottawa west to London and northward at Lake Huron, Lake Superior and Lake Nipigon, also in Manitoba and the Rocky Mountains.

U. gibba, Humped bladderwort produces few very small bladders scattered among the leaves, and only one or two flowers; found at the eastern end of Partridge Lake, Addington County, Ontario (Macoun), and near Westminster, London, Ontario (Dearness).

U. clandestina, Hidden fruited bladderwort; this species, like our wild violets, has two kinds of flowers, one kind like those of the other species, in number 3 to 5; the others very numerous and borne among the bladders under water, strictly cleistogamous, that is, fertilized in the bud, reported from Kent and Albert Counties, N. B.

U. minor, Lesser bladderwort; the bladders of this species are very small, about one-twelfth of an inch in diameter and not numerous, sometimes not any; the flowers from 1 to 10, flower stalk from 2 to 6 inches high. In a marsh at Mount Stewart, Prince

Edward Island, (Macoun) Labrador to British Columbian (Britton).

U. cornuta, Horned bladderwort, grows in the mud at the margin of small lakes and ponds, flowers 1 to 6; very abundant along Gulf River, between Big and Little Bushkong Lakes; at Chicken Bay, Lake Huron, McIntyre's Bay, Lake Nipigon (Macoun); reported from Newfoundland, Nova Scotia, New Brunswick and Quebec. The writer has seen it in bloom on the borders of small lakes near Gravenhurst in the month of July, but could not find any bearing bladders.

Pitcher Plants. The pitfall contrivance is formed by the metamorphosis of the leaves of the pitcher plants into sacs. There is one member of this family common in Canada, from the Maritime Provinces to the Rocky Mountains, growing in mossy bogs and marshes, *Sarracenia purpurea*, Pitcher plant, Huntsman's Cup. See Fig. 1879, showing the rosette of leaves and flowers borne singly upon the upright stalk.

As will be seen by the engraving, the leaves, arranged in the form of a rosette



Fig. 1879.

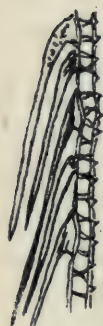


Fig. 1880.



Fig. 1881.

upon the ground, instead of the usual flat leaf blade and narrow leaf stalk, have been changed, stalk and blade into lengthy sacs, resting upon their backs, inflated about the middle, somewhat contracted about the mouth, which is raised up from the ground and bordered with a collar or sort of hood. This hood is streaked with red veins, often of a vermillion brightness, and holds its concave surface in a position to catch the rain-drops and conduct them into the cavity below. Near the mouth the pitcher is provided on the inside with glands which exude a sweet fluid that is spread thinly over what may be termed the throat. Below this the interior is lined with long, smooth, sharp-pointed bristles. See Fig. 1880, a section through the wall of the sac, showing the long spinous bristles greatly magnified. The bright colors and sweets allure the insects, many slide down over the smooth slippery spines; after vainly endeavoring to climb the bristle-lined wall they sink exhausted into

the water below and perish. When a number are decaying the water becomes turbid, resembling manure water. It is not yet known whether the fluid is mere rain water or whether the gland-like cells at the bottom exude a secretion which modifies its character. Will not some reader of the Canadian Horticulturist settle this question? It is in this way that Pitcher plants obtain more or less of their required nitrogen. These comprise all of the Canadian plants embraced in the first group.

Turning now to the consideration of the second group, those plants that exhibit movements in capturing their prey, we find that the Canadian members are confined to two plant families, one also belonging to the Bladderwort family and four to the Sundew family. This one, which is placed by botanists in Bladderwort family, has no bladders, does not live in water, captures insects by the involution of its leaf margins. It may be briefly described as follows—*Pinguicula vulgaris*, Butterwort. The leaves are entire, arranged in a rosette at the base of the leafless flower stalk, flower violet-purple, one petaled, two lipped, upper lip two cleft, under three cleft, nearly straight nectar bearing spur varying from one-sixth to one-third of an inch in length. Its range is from Newfoundland and Quebec through Ontario to the Rocky Mountains. In Ontario at Red Bay, Lake Huron, along the coast of Lake Superior from Michipicotin to Red Rock, on St. Ignace Island and on the east coast of Lake Nipigon (Macoun).

Fig. 1881 represents a flowering plant. The upper surface of the leaves is covered with numerous glands which secrete a sticky fluid that is poured out profusely whenever an insect or other nitrogenous body is brought continuously in contact with them; to this, at such times only, is added another fluid similar to the gastric juice of animals. When small insects alight upon the leaf they are detained by the sticky sub-



Fig. 1882.

stance always presented ; struggling to extricate themselves only makes matters worse by exciting the glands to a more abundant discharge. If they alight near the edge where the glands are less numerous, this part of the leaf gradually rolls inward to cover its prey. If the creature be too large to permit of that, it is pushed into the middle where the glands are abundant. The only movement is that made by the leaf margin, it is not rapid, it is slow ; if it folds over the insect it will remain in that position until its prey has been digested and absorbed, which is usually completed in 24 hours, when it forthwith moves back to its normal position.

There is something almost startling when told that a member of the vegetable king-

dom is endowed with sensation, a seemingly voluntary power of motion, and digestion through the secretion of a digestive fluid like that of animals. What becomes of the vanishing line between the animal and vegetable kingdom ? Doubtless our *Pinguicula vulgaris* received its name of Butterwort from being greasy to the touch ; but far more than a century ago its leaves were used in dairy farming to produce the same changes in milk that are now brought about by the use of rennet, so that its association with dairy products is more than fanciful.

The movements made by the members of the Sundew Family are more striking, especially those of the leaves of Venus Flytrap, *Dionæa Muscipula*, which is not found north of eastern North Carolina. Nevertheless, the process of capturing small animals by those members growing in Canada is very interesting. Upon the upper surface of the leaves of these plants are numerous delicate wine-red filaments, tipped with a tiny round knob, bearing a fluid droplet. These filaments are of unequal length, resembling a number of small pins thrust into a cushion to unequal depths, the shorter in the centre the longer at the margin. Each leaf is said to contain about 200. The ball-shaped knob is a gland that secretes the tiny droplet which is transparent and sticky, sufficiently cohesive to be easily drawn out into threads. This droplet glittering brightly in the sunlight much resembles a dewdrop, hence the name Sundew. When an insect or other organic nitrogenous body touches any of these glands they at once begin to discharge a true digesting fluid such as is secreted by the leaf-glands of the Butterwort, and having the same properties as the gastric juice of the animal stomach.

Doubtless, many insects are deceived by the glittering droplets, mistaking them for honey, become entangled among them by reason of their adhesiveness, and in endeavoring to escape cause the glands to give

out a more copious effusion and set the filaments in motion. The filaments to which the insects adheres begin to bend inward, much as we bend a finger into the palm of the hand. When this has bent down so that the prey is brought to the surface of the leaf, the filaments nearest to it will bend in the same manner, and when these touch the surface others adjoining follow, and this sort of movement by detachments is kept up until all the filaments are bent down.

Fig. 1883 shows a leaf with half of the filaments bent over the captive, and one where they are all inflexed towards the middle. These are both magnified, and illustrate the movement when the insect has been captured by one of the filaments on the margin of a leaf of the round leaved species, by which it is necessarily brought into the centre. It must often occur that the capture is made by a filament other than one on the margin, but, whatever the position, the incurving filaments never fail of their aim. If two are captured at the same time the filaments divide into two groups. Indeed all these movements vary according to the needs of the movement, so that the purpose to immerse the prey in an abundance of digesting fluid never fails of accomplishment. The filaments are also endowed with discrimination, for if grains of sand or other non-nitrogenous bodies come in contact with the glands, though secretion is increased, no pepsin is discharged and no bending takes place. As soon as the prey has been digested the filaments resume their former position, the time occupied in absorbing the nutrient portions varying with the size of the captive. It is surprising to find that they capture so many and so large insects, not midges only, but ants, flies, small butterflies, dragon flies, these larger being secured by the co-operation of two or more leaves. The remains of thirteen different insects have been found upon a single leaf.



Fig. 1883.

A brief mention of the several Canadian species of Sundew will close this paper.

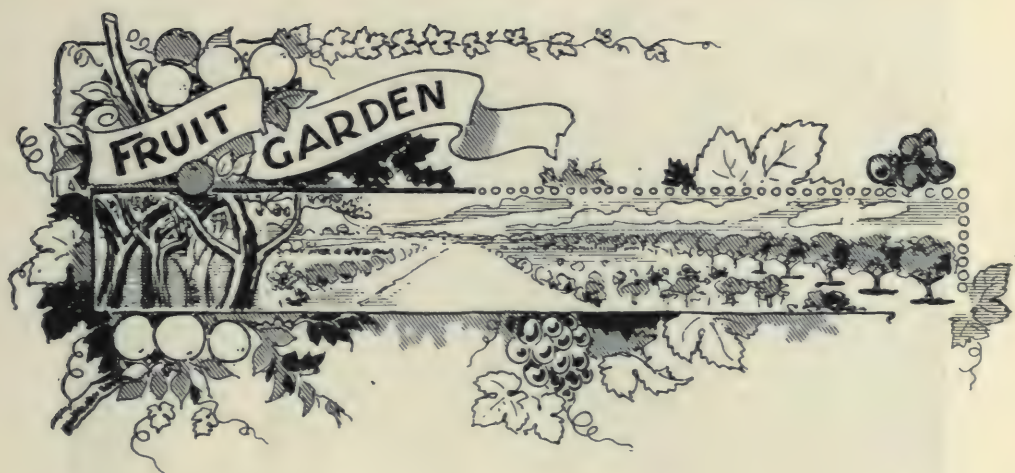
Drosera rotundifolia, Round-leaved Sundew, grows in bogs and marshes from the Atlantic to the Pacific. See Fig. 1882, natural size. *D. intermedia*, Spatulate Sundew, in bogs and margins of lakes throughout Quebec and northern Ontario to Manitoba. Both of these are abundant in mossy beds bordering Holland River west of Newmarket.

D. longifolia, Oblong-leaved Sundew, in boggy ground along the shores of Lake Huron, Bruce peninsula, Manitoba and British Columbia (Macoun).

D. linearis, Slender-leaved Sundew, in marshes of Lake Simcoe, Chicken Bay, McLeod's Harbor and Cockburn Island, Lake Huron to Manitoba and Rocky Mountains.

D. W. BEADLE.

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FRUIT CULTURE.—VI.

THE CHERRY.

THIS fruit has been receiving deserved attention in southern Ontario during the last few years, although its full value as an orchard crop has by no means been fully recognized. Broadly speaking, there are three types,—the sweet cherries, including Bigarreau and Heart varieties; the sour, including Morellos and the Kentish varieties; and the Duke class, the varieties of which comes half-way between the sour and sweet types, having a growth corresponding more to that of the sweet cherry, but fruit of an acid or sub-acid character. In southern Ontario, and where the tender varieties of the Dominion plums succeed, the sweet cherry and the Dukes will be satisfactorily cultivated. Outside the peach limit, however, it would be advisable to have a northern exposure. Most varieties of the Morello type will thrive with proper care over the larger part of Ontario.

SOIL.—While many of the fruits already treated of will succeed in a variety of soils, providing proper drainage is given, the cherry is particular about its location. A

warm, sandy or gravelly soil, rich and well drained, is the ideal spot. If planted on heavy or wet lands it may do fairly well with extra care for a short time; but real success cannot be achieved and the tree will not live many years.

PLANTING AND PRUNING.—The sour cherries may be planted about eighteen feet apart, the Dukes twenty, and sweet cherries at least twenty-five. Even a sour variety, like the Early Richmond, would probably be better twenty feet apart. Fig 49 is from a photograph of an Early Richmond orchard ten years old, and sixteen feet apart, and it will be seen that the trees even now need room. The cherry, of all fruit trees, is the most difficult to transplant successfully. The general experience is that more losses occur than with the planting of any other kind of tree, and it will decidedly pay to buy one-year old trees. The method of pruning the first two years is much like that employed for the apple. The Duke cherries are very upright growers, and the young shoots should be pruned to an outside bud,



FIG. 49

M. BURRELL.

and the head somewhat opened up. The sour cherries, on the other hand, are inclined to be drooping and spreading in habit, and the tendency must be corrected as early as possible. See Fig. 50. The head once formed, little pruning of the cherry is required. In fact, the less the better, as a good deal of gum exudes from the pruned parts, and the wounds heal less easily than those of other trees. The sweet cherries may be headed slightly higher than the

Dukes or sours. Fig. 51 illustrates a crotch the evil of which will be remedied by removing the branch at A in Fig. 52.

CULTIVATION AND MANURING.—The general system of tillage and manuring advocated for other fruits will apply also in the case of the cherry. People who have been accustomed to grow the sour cherry in sod along their fences have little conception what this fruit will do when generously treated. The orchard in Fig. 49, comprising now about one hundred and forty bearing trees, commenced to fruit in the fourth year, and has not failed to produce a crop since. Since that time it has received one heavy coating of manure, a good crop of crimson clover plowed under, and two applications of unleached wood ashes at the rate of eighty bushels to the acre. No weeds have been allowed to grow. No plowing was done in the past spring, the disc harrow working the ground from the trees and a fine-toothed harrow doing the rest of the work, with the exception of a

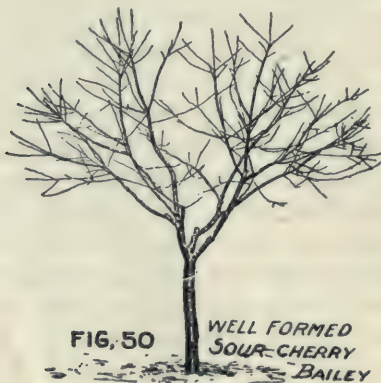


FIG. 50

WELL FORMED
SOUR-CHERRY
BAILEY



FIG 51
Windsor cherry, four years set.



FIG 52
The tree pruned. BAILEY

little hoeing round the trees. Three hundred and forty baskets of fine fruit were taken off the last season, and practically no rot or wormy cherries in the whole orchard. The only poor row was the one next to the fence, where cultivation could only be given on one side of the row.

VARIETIES, IN ORDER OF RIPENING.—For the colder sections of the Province, *Early Richmond*, *Montmorency*, *Ostheim*, *English Morello*. All of these are sour and of high value for preserving and cooking purposes. *Montmorency* is a firm cherry, of good size, and of a more upright growth than the *Richmond*. (See Fig. 53.)

For districts where the thermometer seldom goes lower than 15° below zero, the above varieties for sour; and, in addition, *May Duke*, *Black Tartarian* and *Windsor*. Extensive planting of the sweet varieties is not recommended till more is known about their hardiness. Professor Hutt, of the Ontario Agricultural College, is now testing a large number of these varieties. For southern Ontario, *Early Richmond*, *Montmorency*, *English Morello*, *May Duke*; Sweet varieties, *Governor Wood*, *Black Tartarian*, *Yellow*

Spanish, *Knight's Early Black*, *Napoleon Bigarreau* and *Windsor*.

DISEASES.—Mildew, black-knot and rot (*Monilia*). Mildew of the leaf, (especially affecting the younger trees of the sour class). For this, spray with Bordeaux mixture. Black-knot, affecting sour cherries chiefly, systematic cutting out and burning. Rot, principally affecting the sweet cherries; this is the great drawback to the culture of the sweet cherry. One spraying with Bordeaux mixture before the blossoms open, and two or three after they have fallen, will generally keep the crop fairly free from rot. In a wet season it is impossible to prevent it altogether. *May Duke*, *Yellow Spanish* and *Napoleon Bigarreau* are especially liable to rot.

INSECTS. — Curculio, black aphid, and sometimes the peach borer. The best remedy for the black aphid is tobacco water, one pound to three gallons, and one quarter pound of whale oil soap added, or one pound whale oil soap to seven gallons water, mix hot. Kerosene emulsion, if used, should be strong—one to seven or eight. The applications must be early and thorough.



THE QUINCE.

The history of the quince carries us back as far as the early days of Greece. An ancient, and always a highly-esteemed fruit. Judging from the prices of the last few years, the quince appears to have fallen from its high estate. The Greeks and Romans considered it to be possessed of special

health-giving properties. The modern quince grower would doubtless like to persuade the public of the truth of this, and would gladly see a little of the money that is spent on patent medicines devoted to the purchase of quinces. At all events, there will always be a fair demand for good samples of this fruit, and every farmer should have a tree or two for his own use. For jellies, and for preserving with other fruits, it has a high value, and can be easily and cheaply grown.

SOIL.—The quince can stand more neglect than most fruits, and usually gets all it can stand. It is a popular belief that a low, wet corner, unfitted for anything else, will make an appropriate home for a quince tree. Nothing could be farther from the mark. It should have a rich, deep, mellow soil, and well drained at that.

PLANTING, ETC.—Two-year old trees should be planted; and at a



FIG. 54
Neglected Quince-Tree.



FIG 55 *THOMAS*
Well-Pruned Quince-Tree



FIG 56

BAILEY
New York quince trees.

distance of twelve feet apart. The tree should be shaped with a very low head, the pruning being merely the thinning out of the centre, the removal of all suckers and an occasional cutting back to keep the tree from getting a straggly appearance. Some people grow them in bush form. If this is done, only three or four main stems should be allowed to grow. The accompanying Figs. 54 and 55 will illustrate the matter. Where old trees have been neglected, they should be thoroughly pruned on the lines indicated, and have a good dressing of manure worked in around the roots in spring. When the trees are in full bearing, cultivation becomes difficult on account of the closeness of the trees and their spreading character. The quince orchard may then be seeded down, but pruning must not be neglected, and a top-dressing of manure should be given every second or third year.

VARIETIES.—*Champion*, *Meech's Prolific*

and *Orange* are good quinces of the large, round, orange type. The *Pear* quince, as its name indicates, is pear-shaped. It is a more solid fruit than the others, ripens later, and is somewhat smaller. If well manured and thinned it will give excellent results.

DISEASES.—Blight and "red rust" are the worst diseases affecting the quince. The latter is the same fungus that in the earlier stages is known as the "cedar-apple" of the red cedar. Spraying with Bordeaux mixture will assist in controlling it, but were practicable it would be advisable to cut down cedars near the quince orchard.

INSECTS.—The borer and quince curculio are sometimes injurious. The former is the round headed apple borer (*Saperda Candida*) and is referred to in the 1897 Institute Report, p. 180. The curculio can be trapped by the "jarring" method.

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FIG. 1884



FIG. 1885.

THE PREVENTION OF LEAF CURL.

CORNELL Bull., No. 180, gives results of experiments in trying to control this evil of the peach tree. These tests were made in 1899, and the varieties treated were Elberta, Crawford, Hill's Chili, Brigden, Mountain Rose, etc.

Murill, the experimenter, gives the following as his conclusions :

There is no good reason for giving up the Elberta or any other variety of peach sensitive to leaf-curl, as the disease can be controlled by spraying at trifling expense.

Of the three substances employed as fungicides in these experiments, the Bordeaux mixture is the most useful ; and, though several different strengths of this mixture have been found nearly equal in efficiency the past season, for the early spraying a strong solution is recommended. When Bordeaux of good strength is used early and a season of warm, dry weather follows, continued as late as the middle of May, a second spraying is not profitable ; but if the weather is cold and wet, it is well to spray again with Bordeaux after the petals fall, using only two pounds of copper sulphate (with excess of lime) to fifty gallons of water, for, notwithstanding some statements to the contrary, the foliage of the peach seems sensitive to stronger solutions.

The treatment, then for the prevention of peach-leaf curl based upon my own and other experiments is briefly as follows :

1. Spray with Bordeaux consisting of 6 lbs. of copper sulphate, 4 lbs. of good quick-lime, and 50 gals. of water about the first of April, when the buds are beginning to swell.
2. Spray again when the petals have

fallen with Bordeaux consisting of 2 lbs. of copper sulphate, 2 lbs. of good quick-lime, and 50 gals. of water. If the weather of April and early May is warm and dry, this second spraying may be omitted.

Lime or copper sulphate alone with water have been almost as effective as Bordeaux the past season when used for the first spraying and followed later by Bordeaux, but their effects are not so lasting ; particularly in rainy weather, and, whether the season is favorable or unfavorable, the second spraying with Bordeaux should not be omitted when lime or copper sulphate are used alone for the first.

At the Ohio Agricultural Experimental Station, investigations of plant diseases have been carried on since 1891, beginning with apple scab, and extending over various other fungi. Since 1895, experiments were tried with the object of checking the curl of the peach, and in 1897 a considerable portion of the foliage of the peach trees was saved, and in 1898 it was conclusively shown that Bordeaux mixture was most effective against leaf curl.

Our readers in Ontario who are peach growers will be especially interested in these two illustrations, because of the importance of the Elberta as a market peach, which has often shown itself so susceptible to leaf curl that the crop has been spoiled for the season.* But if we can depend upon spraying to keep this fungus in check, we may continue planting this variety with confidence.

PRUNING ORCHARDS.

DURING several years the Illinois Experimental Station has been conducting experiments in pruning fruit trees. These investigations show us that the pruning of apple trees is too little practiced by fruit growers generally. It seems well, therefore, to say a few words on the subject at the present time.

Pruning is the removal of superfluous branches, thus allowing a free circulation of air in the tree tops ; and admitting light to the remaining inner branches of the tree. Its object is simply that of securing more and better fruit. When trees are left to themselves the branches crowd one another and do not give sufficient room and sunlight and air for the developing of fruit on the inner branches. Moreover, fruit which is developed on unpruned trees can not be readily protected from apple scab and codling moth, as well as other diseases and insects. The cost of spraying is much less in point of time and material saved on trees which are judiciously pruned. Cultivation, too, is carried on with greater ease and effectiveness in the pruned orchard. Harvesting of fruit also is greatly facilitated in those trees which are properly pruned.

The ideal pruning is that which commences in the nursery rows when the trees are a year old and continued each year until the trees have served their usefulness in the orchard where they have borne fruit for many years. It is therefore an operation which commences with the nurseryman, and it is his office to see that the trees are symmetrical and with limbs at the proper distance from the ground. The best, and in fact the common way with the majority of nurserymen is to remove, just after they have started, the buds which are found below the point where the head of the tree is

to be and other undesirable places. This is readily and quickly done by rubbing off these young shoots or buds with the hands. It may be necessary to repeat this operation during the first one or two seasons. The second season when the trees are transplanted remove all superfluous limbs close to the body of the tree with a sharp knife, cutting back the remaining three to six fully one-half the previous year's growth. This is the time when the orchardist should receive the tree, yet it is common practice to wait until the plant has attained its second or third year. In any case, the year the trees are finally set in the orchard they should be well headed in, cutting to a bud, which on upright varieties will be left on the inside. This bud is to form the new limb and take its place with its fellows in forming the main branches of the tree. If one desires higher headed trees than those which the nurseryman has to furnish he simply needs to take up a leader, starting the head at the desired point and removing the lower branches. Each year after the trees are planted they should be gone over carefully, and a limb removed here or there, the object being to prevent rubbing of branches and to allow the top to be free and open. The best time to do this, all things considered, is during the months of March and April. The orchardist has more leisure at this time, the limbs can be clearly seen against the sky and the tree does not suffer as it does when wounded during the cold months.

As stated above, the best pruning is that which is done with the hand by rubbing off the buds before the undesirable limbs have had an opportunity to develop to any great extent. If the operation is repeated each year there will never be any large limbs to remove ; at least a saw will rarely be re-

quired. Wherever possible the pruning knife or pruning shears should be used instead of the saw. Try to make as smooth a cut as possible. After the orchard has been gone over with respect to pruning, all wounds left thereby should receive a coat of white lead paint which has been mixed with linseed oil. There are many other materials used for this purpose, but our experiments here seem to show that white lead paint is the most desirable from the point of expense and efficiency.

ORCHARD FERTILITY.

The notion prevails in the minds of many apple growers that apple trees do not require as much plant food proportionately as do other crops. That this notion is wholly erroneous is shown by the result of carefully conducted experiments of Roberts published in Cornell Bulletin 103. These show that the growing of thirty-five apple trees per acre, which makes the distances between trees thirty-five feet, in twenty years production of foliage and fruit, averaging ten bushels per tree, requires plant food in the form of nitrogen, potash, and phosphoric acid in value amounting to \$207.45. This twenty years commences with the time the trees are thirteen years of age, continuing until they are thirty-three years old and it is assumed that during the five years from thirteen to eighteen they would average five bushels per tree per year, ten bushels per tree per year during the next five and fifteen bushels per tree per year during the remaining ten years. This, however, does not take into account the enormous amount of fertility which was required to develop the great amount of wood represented by thirty-five trees per acre. Compare this with the amount of fertility removed by a wheat crop. In twenty years cropping with an average yield of fifteen bushels per acre and seven pounds of straw to three pounds of grain, the total value is \$128.23 removed in the

shape of nitrogen, potash, and phosphoric acid, or \$79.22 less than that required to supply the waste in fruit and leaves of the apple orchard.

No intelligent farmer would expect to grow wheat on the same area for twenty years without the best of cultivation and fertilizing; yet everywhere we find apple growers asking their soil to support a much greater drain than wheat would cause. It is known that some fruit growers are asking their land to support apple trees for forty years in addition to annual secondary crops, and this, too, without giving manures or even cultivation.

The question of the fertility of orchard soil is one which has hitherto received little or no attention from Illinois fruit growers. This is largely because of the fact that throughout a large portion of the state the soil is exceedingly rich in plant food. In fact, a considerable area, especially the central portion, is so rich in the elements of plant food as often to cause an excessive growth of the woody portion of the tree, thereby diminishing its fruit production. On this account few growers of orchard fruits in what is termed the corn belt of the state would think for a moment of applying fertilizers to their orchard soil. This, however, is no reason why the fruit growers in the southern third of the state or in parts of northern Illinois should think that their soil can be uniformly productive without the application of some of the elements of fertility either in the form of applied manures or by the growing of green crops. After a careful study of the question we are thoroughly convinced that there are hundreds of apple orchards in this state which are literally starved to death. In other words, these orchards are on soils whose fertility has either been exhausted or made unavailable by injudicious management.

At this point it is necessary to define what is meant by the word fertility. In its broad-

est sense fertility is a word used to designate the productive power of the soil. This productive power may be due in large measure to the physical condition of the soil rather than to a liberal supply of the chemical constituents necessary for great productivity. Or on the other hand a soil may be wholly unproductive yet contain excessive quantities of plant food, because of the poor physical condition of the soil. All this means that the plant food within the soil counts for nothing if the plant can not get it. We have already emphasized the importance of thorough tillage for making available what plant food there is within the soil. Yet as above stated, even with the best management of the soil in this particular, it may still lose so much plant food that it is necessary to supply commercial fertilizers or other manures.

Of the thirteen elements which the soil may contain and which may be used by plants, only three are ever lost in such quantities as to make their restoration necessary. These are nitrogen, potassium, and phosphorus. Of these three the one most readily lost is nitrogen. This element, which comprises four-fifths of the air, combined with other elements becomes available to the plant. It is the element which is responsible for the rapid development and early formation of our apple trees and other plants. Phosphorus, in the form of phosphoric acid, is necessary in order to give strength and firmness to plants and, next to nitrogen, is, all things considered, the most important element of plant food. While needed only in relatively small quantities by plants it is lacking in many soils. Potash comes next to phosphorus in importance and is the most important constituent for fruiting plants, at least those that are expending their energies in that direction.

Nitrogen.—The yellowing of the foliage and stunted appearance of the tree is a pretty sure indication that the soil is deficient in

nitrogen. An insufficient supply of nitrogen tends to dwarf plants. Good stable manure, if well taken care of, that is, not allowed to leach by rains, will supply to the soil liberal quantities of plant food.

Other sources of nitrogen for plant compounds.—Sodium nitrate is the most important commercial fertilizer containing nitrogen. A hundred and twenty-five pounds of this salt would probably be the minimum amount per acre. But its use is advisable only after other means have failed. This might also be said of barn-yard manure. By all means the cheapest way of securing nitrogen is by thorough tillage, which increases or hastens nitrification, and by green manuring. If these two latter methods are practiced there will rarely ever be occasion to resort to commercial fertilizers.

By green manuring is meant the growing of some crop in the orchard, especially those leguminous or nitrogen forming plants, which, when turned under and decomposed, add nitrogen and other food material to the soil. The greatest good, however, derived from this operation is the addition to the soil of large quantities of humus or decaying vegetable matter which greatly improves the physical condition of the soil, thereby increasing its power to hold plant food and moisture. What crops are most advisable for this purpose depends almost entirely upon soil and climatic conditions. They are usually confined to some of the clovers, peas, beans, vetches, or lupines. Wherever clovers or vetches succeed well they should be used.

These leguminous plants are enabled to take up the free nitrogen of the air by virtue of small nodules or tubercles formed on their roots as a result of the activity of microscopic forms of life known as bacteria. It is now clearly known that if these organisms are not present in the soil the leguminous plants are unable to use the nitrogen of

the air. As a result of this, soil inoculation is often resorted to. This simply consists of taking soil where these plants are found to grow luxuriantly, and have an abundance of the tubercles above referred to, and sowing the same on a new area, a few handfuls of soil often sufficing for an acre of ground. The exact physiological process gone through with by plants in securing this free nitrogen is not definitely known.

Phosphorus.—Phosphoric acid is applied to the soil as a direct fertilizer in the form of superphosphates, bone compounds, etc. Dissolved South Carolina rock is a common commercial form of this manure. Usually, however, if soils are well cared for this element will not be lacking.

Potash.—Potash may be secured in the form of muriate of potash, which is probably the most reliable. Kainit or German potash salts and wood ashes are other forms of this commercial fertilizer, for the bearing orchard at least. Five hundred to seven hundred pounds of muriate of potash, or

forty or fifty bushels of wood ashes, is a dressing per acre for orchards.

The following formula is suggested :

Ground bone	100 pounds.
Acid phosphate.....	100 pounds.
Muriate of potash	100 pounds.
Nitrate of soda.....	125 pounds.

This amount per acre applied in the spring-time and either plowed under or disced into the soil will be found sufficient for those orchards bearing annual crops of fruit. The above formula, however, should be supplemented by special fertilizers or otherwise varied to suit any particular orchard whose soil conditions are peculiar to itself.

It should be understood that this discussion does not encourage the use of commercial fertilizers. There are instances, however, where these must be resorted to. Orchardists should largely confine themselves to cultivation and green manuring for supplying the necessary plant foods.—From Bulletin 55, Illinois Agric'l Exp'l S.

RULES FOR JUDGING FRUITS, WITH A SCALE OF POINTS.

GENERAL RULES.

1st. In all cases the judges are to be governed by the letter and spirit of the schedule under which exhibitors have made their entries, the general appearance of the fruit, care in its selection, and taste displayed in arrangement or grouping, each entry being distinctly separate from the rest. These are all elements of the highest importance, and should receive appropriate consideration by the committee.

2nd. In every group, whether the single plates, threes, fives, tens or larger collections of fruit, there should never be more than one plate of any variety in any one group. List of names of varieties contributed shall accompany each group, and must

be attached to the entry card, and have a corresponding number and designation, with or without exhibitor's name, according to rule.

3rd. The same plates of fruit cannot compete for different prizes, though the several entries for the best ten, five or other numbers, and the best plate, may embrace the same varieties, but not the same plates of specimens; in each case they must be duplicates, and in sweepstakes they will count a single variety.

4th. When the schedule prescribes the number of each kind, usually three or five, to be placed on exhibition, not less than the exact number must be presented.

5th. In general collections of fruits by

individuals, counties, or otherwise, when the several species of fruits are specified in the schedule, they must all be presented, or the collections may be passed by the committee.

6th. In all cases, but more especially in the display, or greatest and best collections, number of varieties is the *prima facie* test of superiority, other things being equal; but quality, relative value, their perfect condition and tasteful appearance, will be considered, and should rank thus, respectively: 1. Number. 2. Quality or Value. 3. Condition, approaching perfection. 4. Taste in the Display.

7th. Unless there are special rules to the contrary the general rules that govern the exhibition of fruit shall apply to the exhibition of flowers. For collections, viz.: Roses, palms, etc., not more than three of any one variety will be allowed in any one collection. In judging collections two plants of different varieties shall rank equal to three of one variety. To illustrate. On a scale of ten—

No. 1 may have 100 plates, the largest collection.....	10
Quality, some inferior varieties.....	5
Condition of Fruit, rather poor.....	5
Taste in Display.....	5
Total	25
No. 2 may have ninety plates.....	8
Quality, superior in most.....	8
Condition of Fruit, perfect.....	10
Taste in Arrangement, good.....	8
Total	34

No. 2 would, in this case, take the premium.

In the case of single plates of the several kinds named, or in a competition for the best plate or basket of any kind of fruit, we may consider condition, form, size, color and texture, with flavor. On the same scale we have two entries to decide, thus:

No. 1.

Condition, perfect.....	10
Form, abnormal.....	8
Size, overgrown.....	8
Color, Perfect.....	10
Texture and Flavor, superior.....	10
Total	46

No. 2.

Condition, stem lost.....	8
Form, perfect.....	10
Size, uneven.....	6
Color, too pale.....	6
Texture and Flavor, insipid.....	5
Total	35

This scale might be used in deciding between any number of single plates of designated varieties competing with one another for the best plate of any kind, or for the basket premium with assortment of single variety, according to the words of the schedule.

SPECIAL RULES.

The judges shall have an ideal standard of perfection in all cases, made up of the following particulars:

1st. The condition and general appearance of the fruit, which must be in its natural state, not rubbed or polished, specked, bruised, wormy, nor eroded; with all its parts, stem, and calyx-segments well preserved, not wilted or shriveled, clean.

2nd. The size, in apples and pears particularly, should be average, neither overgrown nor small. The specimens should be even in size.

3rd. The form should be regular, or normal to the variety, and the lot even.

4th. The color and markings, or the surface, to be in character, not blotched nor scabby.

5th. When comparing different varieties, and even the same kind grown on different

soils, the texture and flavor are important elements in coming to a decision. 5 points.

In the class Peaches, plums, etc., the important elements are size, form, color, flavor and condition. 5 points.

In Grapes we must consider and compare the form and size of the bunches, the size of the berries, their, color, ripeness, and flavor and condition. 3 points.

In Currants we shall have to examine the perfection and size of the bunches, and of the berries, their flavor and condition. 3 points.

In Gooseberries we shall look at the size, color, flavor and condition. 4 points.

In judging Cherries we have as our guide the size and form, color, flavor and condition. 4 points.

In judging Strawberries we shall compare the size and form, color, flavor, firmness and condition. 5 points.

They shall be shown with stem and calyx.

Red Raspberries may be shown with or without the calyx. In this fruit we shall have to judge of the size, color, flavor and condition. 4 points.


Blackcap Raspberries must have size, color, flavor and condition. 4 points.

Blackberries must be tested according as they present size, color and form, flavor and texture, and condition. 4 points.

In all cases it is well to have a convenient scale of comparison, for which the number ten is found to be easily managed. The highest figure denotes perfection for the variety, and five is mediocre; below that is condemnatory. The total of the marks should exceed fifty per cent. of the possible number, or the entry must be passed as unworthy of reward.

Seedlings having once been presented and failing recognition under the rules of the Society, should not again be presented.—Report Nebraska State Horticultural Society.

THE WESTERN NEW YORK FRUIT GROWERS.

HE following questions and answers are from the report of the meeting of this body, which was held last January:

Which are the most valuable Japan plums from a commercial standpoint?

Mr. N. C. Smith—The best plums we have are the Burbank and Wickson for commercial purposes. Our experience has not been very broad with the Wickson—only three years. We find it produces an unusually good crop, provided it is thinned. We thin out to at least three-fourths. We have not determined whether it is a stand-by or not. The Burbank has proved very well, and we consider it one of the best. It is like growing Keiffer pears. We want to grow less in quantity and more in quality and get more for it. The Wickson is not so large and not so showy as the Burbank. A great many

who are growing the Wickson are not satisfied. I understand Mr. Willard is one.

Mr. Willard—I should say from my own experience that the Red June and Burbank are my most valuable varieties. The Red June, in consequence of its clear, cherry-red color, and of its ripening so early, (July 17th we had them this year), good size and fine appearance, sells extremely well. But, as Mr. Smith says, which is true of almost all, they need thinning. My experience with the Wickson has not been so flattering as Mr. Smith's, but the past year's was a little more in its favor. I know of no more productive variety, or one that pays so well as the Burbank. This year, where they were thin upon the tree, they grew so large that the canning factory didn't want them. Like the cherries I told you about, you could take several bites out of them. It is a very fine

canning plum, and sells well wherever I have put it, and it is the greatest producer in the way of Japan plum.

Prof. Van Deman—Do canners like Japan plums?

Yes, sir. I know of no plum equal to Burbank when canned.

Mr. Wood—Is the Burbank plum subject to the yellows?

Mr. Willard—We have never seen anything of it, and we have got probably 1500 trees of Burbank. We have them on both peach roots and plum. I would as soon have them on one as the other. Japan plums are not more exempt from curculio than other plums.

Prof. Van Deman—I think Japan plums will take yellows same as the peach, though not so badly.

Mr. Pillow—I expect the nurserymen to find fault with me, but speaking from the standpoint of the commercial fruit grower, in nine cases out of ten we don't want the Japan plum, because there are so many others better, like the Damson, German and French prune, and a long list of them, any of which are better than the Japan plum. They are tender and liable to be winter killed. You have got to thin them. We don't want them.

Mr. J. B. Collamer—I want the Burbank plum. I have a few of them and they have done well. From an acre and a quarter last year I picked and sold 223 bushels at a dollar a bushel. They are profitable enough for me.

Mr. Bogue—How is the Hudson River Purple doing in western New York?

Mr. Willard—It is subject to the black knot. We are grafting ours over.

What encouragement is there for growing currants?

Mr. Geo. T. Powell—I think the currant one of the most valuable small fruits that can be cultivated at the present time. There is only just one drawback to its cultivation.

Of late years it has been attacked by a number of insects. The currant worm I consider the least of the difficulties of currant culture, because that can be easily controlled. But there is an insect that has recently appeared, the tripeta. In some sections the fruit is absolutely worthless from the attacks of this insect. The stock-borer is another, but it can be controlled. There is a demand for currants since the legislation is looking towards the preservation of our pure foods from adulteration. The jellies that have so successfully imitated it are likely to be driven out. There have been years when the crop has not paid the cost of picking and shipping, but with the increased demand, except for the insect attacks recently coming, it stands to-day one of the most profitable for cultivation.

Mr. Willard—I grow a good many currants and concur with Mr. Powell in all that he said in regard to the profitableness of the fruit. I am sorry Mr. Barns is not in the room because he is one of the large currant growers, and I think he has found the business very satisfactory. My own impression is that a great deal lies in the growing of varieties especially productive and valuable on account of their market qualities. I doubt if some of the old varieties can be grown with a great deal of profit. I have been growing a variety known as the President Wilder, which I believe in every respect the most valuable we have ever grown. Its productiveness is double that of Fay's Prolific. Children picking by the quart at a cent a quart will double their wages on the President Wilder. Mr. Barns sold his crop in Boston at ten and twelve cents, while ordinary varieties brought five and six. The proof of the pudding is the chewing of the string.

A Member—What about the White Imperial?

Mr. Willard—We are speaking of commercial fruit. In point of quality I under-

take to say there is no currant can equal White Imperial as a table fruit.

Mr. Powell—I can indorse that statement, but I want to take exception to Mr. Willard's remark about the Fay. I think it varies in different localities and different soils. With me it is one of the finest and most productive on my place, and I have the President Wilder by the side of it. I have on some special test bushes had sixteen quarts of Fay Prolific on a single bush, and I would like to ask Mr. Willard if he can beat that?

Mr. Willard—No; I take in my horns.

Prof. S. A. Beach being called for, said—I am not prepared to speak on the question of currants from a commercial standpoint. I believe the White Imperial very excellent. The President Wilder is late; doesn't have to be marketed in a hurry. It is not quite as productive as the Cherry and the Fay, but a good grower. We have only a limited quantity on the Experiment Station grounds, and would not like to estimate it in a commercial way.

Mr. W. D. Barns being called for said—I hardly feel competent to answer the question, though we have grown currants largely along the Hudson river for twenty years. Fay's has been the standard for a number of years. It is weak in wood and falls early, and unless kept freely pruned they are apt to lie on the ground and become dirty. It is not a long-lived bush. The Cherry currant does not branch enough. The Versailles is smaller, and on the whole we consider it better for market. May's Victoria has been so far very profitable; not as large as either of the others, but later in the season. The bushes are hardier and it is a good grower. Of the old Victoria we have picked as high as eight quarts from a single bush in a favorable location. In regard to the Wilder and Prince Albert would say that the latter is the latest one to color of any; is different in habit and foliage, vigorous and productive, light color, but has been a good market

variety. The President Wilder we were among the first to set out, and from the first hundred plants we have received better returns than from any other. It is a strong grower; colors almost as early as Fay, will hold on longer, and is fit for market longer than any other variety. The North Star, Pomona and Red Cross we have not tested. The Wilder has averaged from one to two cents a quart more than the Fay or any other currant. We are now pruning our plantations for another year. Although the crop last year was heavy and prices were better than for three or four years, the promise now is as good as last year.

The Windsor Cherry: What of its value as an orchard sort?

President Barry—I will call upon my old friend Mr. Willard to open the discussion.

Mr. Willard—I am very glad for one that this question has been brought up in the form that it has. It may not be known to you all that to Ellwanger & Barry should be given the credit of having introduced this most valuable sweet cherry that has ever been given to the orchardist. I want to say to you that as a market fruit (we are talking of these things upon commercial lines), as a sweet cherry, there has never been one introduced that equals the Windsor. I believe I was one of the first to market this fruit, and wish to say I have a little row of them in front of my orchard that has been bearing three or four years; and assessed as high as that property is, which is far too high, that row of cherry trees has produced sufficient to pay the entire tax on that property—county, state, school, everything.

A member—How many trees?

Mr. Willard—Probably fifty. I said to my wife they were put out there for a purpose. The man who doesn't do things for a purpose cannot tell "where he is at." The purpose of my planting them was to pay the taxes, and they have done so. The

market demands a dark-colored cherry ; its value is higher than any sweet white cherry. The Windsor ripens at the time people want cherries. It is large in size, hard in flesh. Take a large one and you can take three or four bites out of it before you digest it. In 1898 the net price received per pound was ten cents, and in 1899 twelve cents a pound. I undertake to say that there is no cherry, as a market cherry, at the present time, that equals the Windsor.

Mr. Geo. T. Powell—Mr. Willard has left out one of the most valuable features of this of this fruit. He speaks of the value of the fruit, all of which I indorse, but he has not mentioned the exceedingly valuable quality of the tree. It is one possessing unusual resistance to disease. It is a very strong tree, constitutionally. Some of our cherries, the Black Tartarian or Black Eagle, are difficult to raise ; it is impossible to get an orchard to stand. They will grow two or three years and then are attacked by disease, and by five or six years you have a badly broken orchard. The Windsor cherry will stand side by side with the Black Tartarian, and when that goes out the Windsor shows no evidence of disease. Therefore, I prize in the Windsor cherry its ability to resist disease.

A member—What time does it ripen ?

Mr. Powell—In eastern New York it begins to ripen about the sixth to the tenth of July ; perhaps a little later in western New York.

Is there any other new cherry of promise, commercially ?

Pres. Barry—The Bing is a new one. Has any one tried it ?

Mr. Willard—Yes, sir ; I have tried it. The cions were sent to me from Oregon. I

have had it for three years, and it is one of the most beautiful and excellent cherries in every respect. It resembles the Windsor, but is a little larger. Some of them had a circumference of three to three and one-half inches, by actual measurement. I was so interested in fruiting the cherry that I referred to some works I had from the state of Oregon, and found it noted as one of the most promising new cherries they had seen, and I think it will bear out everything said about it there. I think a man who has that and the Windsor ought to be happy.

Prof. Van Deman—What is the best sour cherry ?

Mr. Willard—I think the Montmorency Ordinaire the best and most profitable sour cherry we have at the present time. The English Morello is also good.

Are there any new peaches of special value for the orchardist ?

FITZGERALD.

Mr. Anderson—I have a few trees ; got the buds in Canada. Last year we picked the first fruit, which proved to be insignificant. This year the same trees fruited finely.

Q. How does its size compare with the Early Crawford ?

A. It is not quite as long, but is a good, fine-sized peach.

Q. What is its season for ripening ?

A. I think a little later than the Crawford.

Mr. Willard—I saw it on Mr. Morrill's place, in Michigan, and it was very satisfactory. I have it growing, but have not yet fruited it. In hardness of bud it is excellent.

Mr. C. K. Scoon—As to quality, I would say that it is more than good, it is superb, and equal to Late Crawford.

(To be continued.)

HARDY CHERRIES.

AT the recent meeting of the American Association of Nurserymen at Chicago, on the 13th and 14th of June, an interesting discussion took place on the most productive and hardiest of the Kentish and Morello cherries, from which we give the following extract :

Mr. N. H. Albaugh : In my opinion there are only three really A No. 1 sort of cherries that have been tested in all this western country and that will stand the cold and bear a crop even though the thermometer goes to 25 or 30 below zero, and those are the ordinary Early Richmond, the Dyehouse and the Montmorency. There is the advantage, too, that these three cherries come in succession, the Dyehouse coming first, then the Early Richmond, and then a week or so later the Montmorency, and the Montmorency is a cherry worthy indeed of planting.

Mr. Silas Wilson : A great many people are being misled, mixing up the Large Montmorency with the Montmorency Ordinaire and the Dyehouse. The Large Montmorency with me is an upright grower, rather stocky limb, very different from the Montmorency Ordinaire, which forms a head very similar to that of the Early Richmond, the fruit being much larger, but it does not come into bearing quite as early as the Richmond does. I can tell a Montmorency by its habit of growth, either in the nursery or in the orchard ; it has a larger and longer leaf and more pointed than the Montmorency Ordinaire. In regard to the ripening of the Dyehouse, I have fruited them for a number of years, as well as the Early Richmond, and it is safe to say that they ripened as much as four days earlier than the Early Richmond.

Being asked whether he considered the Dyehouse worth anything, Mr. Wilson said he did not consider it as valuable as the Early Richmond and the English Morello, and on the whole was not inclined to regard it as a great acquisition.

President Peters stated that in his section of the state the English Morello was considered of very little value, it being too slow about coming into bearing, and more likely to suffer from severe winters and curculio than most any other variety of cherry.

Mr. Augustine, of Illinois, stated that his objection to the English Morello was that during a warm, wet season the fruit was apt to become wormy before it ripened. The Large Montmorency, in his opinion, is the most valuable of the sour cherries in the west ; it is a much meatier cherry and the tree is a more vigorous grower than that of the Early Richmond and the cherry will bring one-third more in almost any market than the Early Richmond.

Mr. A. L. Brooke, of Kansas, said that in his state the sour cherry business is a very important business, and the Early Richmond has never been known to fail there. The Dyehouse is not considered to be of much account, as the tree is not hardy. The English Morello in Kansas bears itself almost to death, but it is not a hardy tree, the winters hurt it ; on the bottoms, especially, it will kill out in a very few winters.

Mr. Irving Rouse, of New York, said that the Montmorency cherry is the cherry for the canning factory and it will sell for more money than the Richmond or the Morello.



TIMELY TOPICS FOR THE AMATEUR—VI.

THE flower garden and lawn, especially the latter, usually presents a burnt up, rusty looking appearance during the month of August that is very discouraging to those who take a pride in having their gardens and lawns looking fresh and bright throughout the entire summer. Constant and copious waterings may keep the grass looking comparatively fresh and green, and relieve somewhat the general dried up appearance prevailing around ; but the deficiency in color of foliage, and lack of flower on tree and shrub, is very noticeable on most lawns, at this the ripening season of the year.

The last sprays of bloom of the late flowering Spireas, such as *Spirea Douglasii*, *S. aurifolia*, *S. Bumalda*, and a few other varieties that are so useful in helping to brighten up the lawn during July, are now rusty and dingy looking. Even the useful purple leaved plum (*Prunus Pissardii*), and the purple leaved *Berberis* cannot retain the deep rich coloring of their foliage, if fully exposed to the burning rays of the sun. Many other of our colored and variegated leaved shrubs, also show the effect of the continuous hot sun, and are unable to retain the beautiful color and markings of their foliage, that make them so attractive during spring, and early summer. When planting any of

these variegated or colored foliage shrubs, give them a place, if possible, where they are partially shaded from the mid-day sun,



FIG. 1886. SPIREA DOUGLASII.

as very few of them give the best results possible when fully exposed to the sun during the entire day.

The shrubby Hibiscus or Altheas are, without doubt, the most valuable flowering shrubs for lawn decoration during August, as they retain the rich, glossy emerald green of their foliage, and produce in profusion their large showy flowers during the hottest weather in August. Nothing but a severe and long continued season of drought seems to have any ill effect on these sun-proof hybrids and descendants of the Syrian Hibis-



FIG. 1887. HIBISCUS INCANUS.

cus. These useful and beautiful shrubs will continue in flower well into September if given an occasional watering during very dry weather. Unfortunately, the different varieties of this Hibiscus, so far introduced, are not as proof against severe frosts, as they are sun-resisting in their character; as even in this locality they are sometimes partially killed back in winter, but soon recover, and make new growth very rapidly. As they flower almost entirely on the young growth made earlier in the season, this par-

tial frost killing does not materially injure them. Possibly, varieties may yet be introduced that will be sufficiently hardy to resist the severity of the weather in winter as successfully as the beautiful single and double flowering varieties we now have are in resisting the hot sun in summer.

The herbaceous species of the Hibiscus are of Californian origin, and are of special value, as they also produce their large funnel shaped flowers during the month of August. The variety Hibiscus Californicus, and *H. incanus*, the latter producing an almost pure white flower, are probably the best of the few varieties offered in catalogues at the present time.

Some of the dwarf growing Thuyas or Arbor Vitaes are suitable for planting on small lawns; I do not consider them sufficiently bright and attractive for summer decoration, but they have a much better effect in winter when the ground is covered with snow, and the deciduous trees and shrubs are devoid of foliage. The beautiful dwarf golden tipped *Cyperus* (*Retinospora's*) from Japan, that are seen in such perfection on lawns in the south of England, are, unfortunately, not hardy in this section. None of the *Abies* or *Pine* family are really suited for planting on small lawns, as the annual and disfiguring clipping process they have to undergo to keep them sufficiently under control, entirely spoils the beautiful symmetrical appearance that most of these trees present, when planted out singly, and left to grow unmolested.

The *Aristolochia siphon* or Dutchman's pipe plant is a hardy useful climber for covering arbors, fences, rustic arches, etc., in summer, as its large glossy green foliage retains its beauty all through the summer. A strong point also in its favor is, that no insect injures to any extent its dense, closely overlapping foliage. In localities farther north, where this climber is of questionable hardiness it could be trained on wires dur-

ing the summer, the wires and vines could then be removed both together, laid down and covered up during the winter with leaves or straw. This method is also useful for shading windows, etc., in summer, as no time is lost waiting for the plants to make growth.

The *Ampelopsis quinquefolia*, or common Virginian creeper, is another useful hardy trailing plant that is often overlooked for something far less pretty and effective. The small white insect, the thrip, that attacks the outdoor roses earlier in the season, often attacks the Virginia creeper and other plants during the hot weather. A syringing once or twice a week with strong tobacco water, or a weak solution of Paris green water, will keep down these numerous and voracious little pests. The exotic climber, *Cobea scandens*, can also be used very effectively in various ways around and about the lawn during summer. Seeds or cuttings of this plant must be started in heat in April, or early in May, and kept safe from frost until June, when they can be planted out in rich, light soil and kept well watered. This plant stands the sun well, and has a decidedly tropical appearance, especially when covered with its large purple cup-shaped flowers.

There are many other plants that are sun resisting in their nature, many of them being natives of countries where tropical or sub-tropical climates prevail. Those persons having the advantage of a greenhouse to winter their plants in, have no difficulty with these natives of warmer climates; many of them can, however, be wintered successfully in the dwelling house, or even in a warm cellar.

The numerous family of Agaves, most of which are natives of the southern part of North America, chiefly Mexico, are very useful for outdoor decoration in summer. A few of these plants stood out in large pots or tubs, give a lawn a decidedly bright and

sub-tropical appearance. The two varieties mostly seen on lawns are the *Agave Americanus* that has plain, pale green leaves, and the variegated variety of the same species. Most of the Agaves are of very slow growth, but do not, as many suppose, take a century to reach maturity and produce their immense spikes, as many specimens of these so-called century plants have been known to flower many years before their age had reached the century mark. Some varieties of the Agaves flower annually for years in succession, but most of them, like the two varieties mentioned, produce their blossom and then die. Agaves like a light, fairly rich sandy loam to grow in, with plenty of drainage at the bottom of the tub or pot. Keep the roots moist, but not saturated with water in summer; in winter they require very little if any water. Our watering is often responsible for many failures with Agaves and similar plants of a succulent nature. No amount of sun has any bad effect on the heavy massive foliage of these natives of the south, when once they have become hardened, after having been kept perhaps in close, dark quarters during the winter.

Many varieties of the *Yucca* and *Aloe* family are easy to grow, and make very desirable plants for outdoor use in summer. They require similar treatment to the Agaves.

Cannas can also be used very effectively in different ways on the lawn in summer, their beautiful foliage, ranging in color from pale green in some varieties to dark purple in others, and their curiously marked orchid like spikes of flowers, entitle them to a prominent position amongst our sun-resisting, summer decorative plants. On small lawns where beds or mixed borders of foliage plants cannot be used, groups of *cannas* grown in pots or tubs, placed in suitable positions on the lawn, have a particularly pleasing effect. The roots of the *cannas*

should be started in April in small pots in the hot bed, or even in the dwelling house. In June, after all danger of frost is over, they can be transferred to the large pots or tubs and placed on the lawn. Cannas like rich soil and plenty of water in summer, for this reason the pots or tubs can be sunk to the rim in the soil; they will require less water treated in this way. In autumn, after the first frost, the roots can be packed in



FIG. 1888. MADAME CROZY.

earth in boxes and stood away in a dry, warm place until the following spring. The holes where the pots or tubs have been plunged during the summer can be filled up with earth, and spring flowering bulbs, or early spring flowering plants, such as pansies, myosotis (forget-me-not), or the hardy white arabis can be planted to brighten of the lawn in spring and early summer before the cannas can be stood outside safely.

Many other plants, such as the Ricinus, Caladium Esculentum, large plants of Geraniums, or some of the strong growing varieties of the annual Amaranthus can also be used in the same way as recommended for Cannas, but few of them will be found as effective or as easy to grow as are the Cannas.

Masses and beds of foliage and other plants are bright and pleasing features on lawns, but are not always obtainable, and are besides very expensive.

Groups and single specimens of Palms, Cordylines, Oleanders, Agapanthus (African Lily), and Japanese Lilies, etc., look very pretty on lawns in summer, but few of them, except perhaps the Oleander, can stand the burning rays of the sun during July and August, requiring partial shade at mid-day to be successful in growing them.

There are numerous other methods of utilizing plants for brightening up the lawn and surroundings, such as the use of rustic stands, window boxes, etc. To be successful with these the adaptability of the plants used for the different positions they are to occupy must be considered, so as to prevent failure and disappointment. Care in the selection of plants suitable for sunny or shaded positions is quite as necessary as it is to provide good rich soil for the plants to grow in.

THE GREENHOUSE.—There is very little routine work in the greenhouse, differing materially from that of July. Watering and syringing will have to be closely attended to, both with plants in the greenhouse and those outside in their summer quarters. Calla Lilies should be re-potted if they require it. Freesia bulbs may also be potted; five or six bulbs can be put into a 4-inch pot. Stand the pots outside for five or six weeks in a shady place, give only sufficient water to keep the soil moist; when growth commences more water can be given them. Easter Lily bulbs can be



FIG. 1889. ARISTOLOCHIA.

potted now to ensure early flowering. Stand these outside and give them the same treatment as the Freesia. Pelargoniums should be cut back to within an inch of the old wood. After the plants show signs of growth shake them out from the old soil and re-pot them into smaller pots in rather sandy soil. Give them very little water until well established after re-potting.

Gloxinias that are out of flower may be gradually dried off. Bunch roses must be kept well syringed and the buds picked off.

FLOWER GARDEN. Watering and keeping down the weeds will be the principal work this month. Attend to staking and tying tall growing plants.

VEGETABLE GARDEN.—Celery and late

Cabbage will require plenty of water. Celery may still be planted for late winter use. A row or two of Beets may perhaps give better results if sown now than will those sown in July. Spinach sown now often comes in for use in fall, and will sometimes stand through the winter as well as later sown seed. The end of August or early in September is about the best time to sow Spinach that is wanted for early spring use. Clear off all plants from which the crop has been taken; the ground will be useful for Spinach, Celery, Radishes, etc. Keep down the weeds and draw a loose mulch of earth up to the roots of growing plants where possible; it helps them through the dry weather.

HORTUS, Hamilton.

PREPARATION OF PLANTS FOR WINTER.

PLANTS intended for Winter flowering should be grown for that especial purpose. It is a mistake to think that plants not grown during the summer with this end in view can be made to do satisfactory work in the winter. As a general thing, plants flower best in summer, and if we let them have their way, they will bloom freely then and take their rest later on, when if we had our way they would be full of flowers. It will be seen, therefore, that we have to reverse the natural order of things, to a great extent, and oblige the plants intended for winter flowering to take what rest they receive during the season at the time when they would be producing flowers if left to themselves. This we must do, with most plants, if we expect them to make the window-garden attractive. We must look ahead—anticipate—and so treat our plants that they conform to our opinion of what is best for them. This they will do if we give them to understand that we expect them to be governed by us, for plants are generally tractable, but this they will not

do unless we hold fast to the treatment we set out with. Plants are like children. They are obedient when they know that we “mean it,” but if our government of them is half-hearted and vacillating, they are pretty sure to take advantage of our lapses from authority and insist on having their own way.

Some persons tell me that they do not understand why a plant should not bloom in winter after having been allowed to bloom all summer. These persons have given the subject but little thought, or the reason would be apparent to them with but little effort. It is not natural for a plant to keep on growing and flowering the year round, any more than it would be for us to keep on working from week to week, without stopping to sleep or rest. True, we might get along with less sleep than we are inclined to take—indeed, we might accustom ourselves to get along with but very little, but such a practice would result in the lowering of the vitality of the system to such an extent that we would be utterly unable to do good

work, or a great deal of it. It is a law of nature that action must be followed by rest. After exhaustion, resulting from work, there must be an opportunity for recuperation, and this rest, this recuperation, can only take place under favorable conditions. If we try to rest amid noise and bustle, we only half rest. If a plant tries to rest amid conditions which prevail when growth goes on, it is never able to attain to that degree of relaxation which must accompany the phenomenon of perfect rest. In this respect men and plants are alike. "All work and no play make Jack a dull boy," they used to say, and the truth of the saying is just as pertinent to-day as it was years ago, and it applies to all animate things. Overwork prevents full development. It interferes with good work. Every expenditure of vital force must be made up for by a period of rest, in which the system is given a chance to get back to the condition it was in before the effort was made which brought on exhaustion. This law cannot be ignored without disastrous results in any line of life. But this law we constantly violate, and the result is debility, if not positive disease, and it is but a question of time, if the violation goes on, when positive disease must set in.

Hundreds of complaints similar to this one come to me during the year. "What can be the matter with my geraniums? They have hardly had a blossom on them this winter. They are growing, but I want flowers instead of leaves. They are good flowering kinds I know, because they bloom profusely all summer." Such a complaint answers the question asked in it, but the questioner does not know this. The fact that the plants bloomed all summer explains fully why they failed to bloom in winter. They exhausted themselves then, and they are obliged to take the winter to rest in. If the owner had kept them from blooming in summer, and had given just

enough water to keep them from drying up and no fertilizer to excite growth, and all buds had been removed as soon as discovered, the plants would have been nearly dormant and would have remained so until giving more water started them into more active growth. Then some good fertilizer could have been given, or they could have been repotted into fresh, rich soil, and by Winter they would have been strong and vigorous and anxious to flower. This is the treatment all plants intended for winter flowering should have. Keep them as nearly at a standstill during the summer as possible. Of course they will grow some. But whatever growth is made will be sturdy and strong, if slow, and they will come to their winter's work in the best possible condition. Most amateurs will see that this is almost opposite to the treatment they give their plants in summer.

The production of flowers exhausts a plant much more than the production of leaves. Therefore, it is very important that all buds should be removed at once, that all the strength of the plant may go into its branches. The ends of new branches should be nipped off from time to time during the season, to force the plants to branch, and thus become bushy and compact. The more branches there are the greater the number of blossoming points. Geraniums will need especial attention of this kind, because they have a tendency, if let alone, to grow up, up, up, and form tall, leggy specimens with few branches. Such a plant is never very pleasing, and it will have few flowers. But a properly trained plant will be compact and symmetrical, and often it will have a dozen or twenty clusters of flowers on it at a time. The superiority of such a specimen will be readily apparent to any one seeing it alongside a specimen of the untrained geranium.

E. E. REXFORD,
in *How to Grow Flowers*.

(To be continued.)



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th. ¹⁹⁰⁷
SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc., but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

THE CLYDE STRAWBERRY is said by some of our readers to be a poor shipper. They give it great credit as producer of fine large berries, but say that they are not firm enough to carry far in good condition. Is this a general complaint?

GILLET'S LYE must be applied to the foliage of fruit trees with caution. At Maplehurst it was used early in June to destroy the cherry aphid, in proportion of one ten cent package to five gallons of water, and while it killed the aphid it also destroyed a great deal of the foliage.

CUMBERLAND RASPBERRY.—This raspberry fruited last year for the first time at the Michigan Experimental Station, and the report says of it: The plants are vigorous in growth and very productive. Berries large, firm, juicy and of a sweet rich flavor. This variety possesses such a combination of

good qualities as seem likely to make it a popular home and market berry.

ENGLISH GOOSEBERRIES may possibly be raised with success if carefully sprayed. Bulletin 77, Mich., says that all the English varieties, except Orange and Champion, bore good crops, having been sprayed twice with Bordeaux, and in June with potassium sulphide, three ounces to ten gallons of water. Those English gooseberries sold in Chicago at from \$1.25 and \$1.50 per sixteen quart case, which was about double the amount received for American berries shipped at the same time.

SOIL CULTURE, CEREALS AND FRUITS, is the title of a pamphlet recently published by the Department of Agriculture at Ottawa, and prepared by Dr. Wm. Saunders. In this he refers to the work of cross fertilization in progress, and points out special

characteristics of several new varieties raised by crossing Wealthy and Tetofsky on *Pyrus baccata*. These will endure the climate of Manitoba, and be of great value in that province.

BEST VARIETIES.—Mr. W. Warnock recently read a paper before the Goderich Horticultural Society on this subject. He commended the following list, viz. : *Apples*, Transparent, Primate, Duchess, Gravenstein, King, Spy. *Pears*, Bartlett, Louise, Duchess, Anjou, Clairegeau, Druard. *Plums*, Saunders, Washington, Bradshaw, Yellow Egg, Lombard, Reine Claude. *Grapes*, Green Mountain, Diamond, Brigh-ton, Worden, Wilder, Vergennes.

HORTICULTURAL SOCIETY EXHIBITS AT THE INDUSTRIAL.—It does not seem generally known that there are special prizes offered at this fair for General Collection of Fruit shown by any Electoral District Society, Horticultural Society, Fruit Growers' Association or Farmers' Institute. Mr. W. E. Wellington, our representative on the Board of the Industrial Fair, has exerted himself very much in the interests of fruit and flower growers, and has not only secured liberal prizes in these departments generally, but for the Society's exhibits above mentioned in particular he has secured for this year an exceptionally good offer of \$50 for the 1st prize and \$35 for the 2nd. Hitherto the Burlington and Louth Societies have been almost the only ones who have made exhibits, but we hope that this year some of our affiliated societies will be represented.

EXPERIMENTAL WORK.—The following experiments are proposed by Prof. Loch-head, of the O. A. C., Guelph, and we hope many of our readers will try them and report to him :

Cucumber Beetle.—Experiment—Mix an

ounce or so of turpentine in a gallon of ashes and stir thoroughly. Drop a table-spoonful on each melon hill.

Cabbage Root Maggot.—Experiment 1—Put a tablespoonful of carbon bisulphide in a hole at the base of young transplanted cabbage, and cover up the hole, so that the fumes will not escape. Experiment 2—Spray forcibly some carbolic acid emulsion (made by dissolving 1 lb. hard soap in one gallon boiling water and adding 1 pint crude carbolic acid, emulsify by agitation), about the base of the plant, some of the earth having been first removed. Replace the earth. Repeat once a week.

Onion Maggot.—Try experiment outlined in 2.

Codling Worm.—Try "Burlap" or "sack-ing," as outlined in March Canadian Horticulturist, p. 88, to prevent the attacks of the second brood. Be careful to spray well with Paris Green and Bordeaux right after bloom to kill as many of the first brood as possible.

THE ROSE BEETLE.—This insect is very destructive to apple foliage and young fruit about Grimsby this season. About the middle of June a box of these beetles were sent into this office, gathered from an apple tree which was "alive with them," feeding upon both foliage and fruit. They are considered so difficult to destroy that handpick, an endless job, is often suggested. Durham tried Paris green on these at Grimsby with great success, using eight pounds to forty gallons of water, and says he routed the enemy completely without damage to the foliage. Dr. Fletcher says : Handpicking would be a rather tedious practice to clear vines and apple trees from this pest. It is claimed by Prof. Webster that if the beetles can be touched with a spray of whale-oil soap it destroys them. This would be much better than handpicking. Beating might be useful, but they are so extremely active that

I fear few would fall on to the sheet placed beneath the trees to be beaten. Single rose bushes, or vines, can of course be covered

with mosquito netting, but this is impracticable on a large scale. The injury to apples is much less common than to grapes.

QUESTION DRAWER.

Excrecence on Elm Twig.

1171.—SIR.—Enclosed I send you a cutting from one of my American Elms planted 12 or 14 years ago; I also notice a red, juicy matter exuding from some of them, with a large knotty substance growing on the trunk of the tree.

Port Hope.

J. HELM.

The excrecence on the small elm twig from Mr. Helm, Port Hope, is merely an effort of the elm tree to overcome a former injury which may have originally been caused by the Woolly Aphis of the elm. These woody nodular growths are frequently found on the Canadian ash and apple.

Ottawa.

J. FLETCHER.

1172. SIR,—Kindly advise me in the Horticulturist what is the best variety for size and flavor to be planted in clay soil for home consumption.

A SUBSCRIBER.

I presume the Subscriber means by "*for home consumption*" for his own table, and asking for flavor he wants a berry of quality. If am right in my surmise, I would name the "*Annie Laurie*" as such a berry. It is a staminate, a seedling of Mr. Beaver's, of

Ohio; bright, shining scarlet in color, gold seeds on the outside; very much resembling the Jersey Queen in appearance. It is of the very finest quality, in fact you might take it for a standard of quality; it is medium to late in season; it is fairly productive; the very finest table variety, and is a fine one for canning; it is a staminate variety. But if the subscriber means by home consumption the home market and wants to know the best market variety, I have no hesitation in naming the Clyde as the best for such purposes. A strong grower, staminate, plant very healthy, fruit very large, firm, good flavored and a wonderful producer of the largest berries; stands dry weather among the best. The Clyde has done well the past season. It seems to have succeeded well in clay, as well as on the lighter soils. It is highly spoken of wherever grown. Stands easily first among strawberries for all purposes.

Port Rowan.

E. B. STEVENSON.

Open Letters.

Fruit Prospects About Goderich.

SIR,—The prospects for fruit are not what was expected earlier in the season in this district. There are no plums scarcely, cherries were very few; the birds left us the pits of the early ones, the few there were. We had a fair crop of Rockport. This is the best variety I know of in this neighborhood. It is a fine meaty cherry with a small pit. Pears with us are also scarce, except the Bartlett, which is good. Apples—some trees blossomed freely, but the fruit is very thin on the

trees. What there is looks very well. On the whole there will be a very light crop.

We are not much troubled with the tent caterpillar in this section, I am glad to say. The Duchess seems to be the heaviest yielder with us. The small fruit, as strawberries and raspberries, is a fair crop. Gooseberries rather light; currants good. I find during haying that the grasshoppers are very scarce this year.

Goderich.

WALTER HICK.

(Draft)

DEAR SIRs,—I am directed by the Honourable the Minister of Agriculture to state that representations have been made to the Department of Agriculture by many of the chief shippers and receivers of Canadian apples and cheese that it is desirable that the holds and other parts of the steamships in which apples and cheese are carried to Great Britain should be ventilated by forced circulation of air during the voyage.

It is well known that cheese and apples generate heat during the process of curing and ripening. Unless provision is made for the removal of the heat thus generated, the places where the apples and cheese are carried become heated, to the damage of the flavor and other qualities of these products.

The shippers of these products have represented to this Department that it would be greatly to the benefit of all these connected with the trade in these products—producers, merchants and the steamship owners—to have ventilated accommodation for them on all the steamships. Similar representations have been made to the Department from importers of these products in Great Britain.

I am directed to say to you that, to encourage the equipment of steamships which are in the trade to carry cheese and apples with the ventilating shafts and fans which are necessary for the purpose indicated, the Minister has authorized the payment of \$100 toward the initial expense of fitting up each approved steamship, to be paid after such ventilating equipment has been kept in use for at least three voyages.

A blue print illustrating the provision that can be made for such ventilation, is sent to you under another cover. A number of the steamships sailing between Canadian ports and Great Britain have already been fitted up in accordance with these plans, and the results have been satisfactory.

Two or more agents of this Department will be at Montreal to observe how cheese and apples are loaded in the various steamships in order that the Department may be able to make recommendations to the producers and shippers of these products, looking towards improvement of their quality and the condition of the packages. It is intended to have agents of this Department also in at least four of the cities of Great Britain to observe the condition in which cheese, butter and apples particularly are discharged from the various steamships.

The names of the steamships, together with a statement of the facts as to whether they are properly ventilated, will be published from time to time by the Department, in accordance with the reports received from these inspectors, in Canada and Great Britain.



FIG. 1890. CLIMBING HYDRANGEA.

As the safe carriage of these products will be to the benefit of all concerned, the Department ventures to expect that as on former occasions it will have the hearty co-operation of the steamship owners and agents.

Yours truly,

JAS. N. ROBERTSON, Commissioner.

Is the Love for Flowers Diminishing in the City of Hamilton?

On the 21st June the Directors of the Horticultural Society held their annual flower show, which was certainly a very fine show of cut flowers, and was very creditable to the untiring efforts put forth by the President and Directors. The display of roses and herbaceous cut blooms was particularly good, and some of the specimens not often seen in this country, such as the Rhododendrous, Ghent and Mollis varieties of hardy azalias grown out of doors. There was a large display of roses by a number of exhibitors; the peonies were also very fine. We noticed also very fine blooms of the following: *Digitalis* or Fox Glove, *Campanulas* (Canterbury bells), *Iris*, *Poppies*, *Pyrethums*, *Lychnus*, *Hemerocalus*, *Herbaceous Spireas*, etc. Mr. Wild exhibited the best samples



FIG. 1891. FLOWERING CYME
OF HYDRANGEA.

of strawberries and gooseberries to be seen this year. Mr. Knox had a basket of cut blooms of his climbing hydrangea, from Japan, the only one of its kind in Canada. It clings like an ivy against his residence.

We reproduce from page 300, 1899, a photograph of this rare climber growing on the house of Mr. John Knox, which Mr. Robertson considers is valuable. We now add a photo of one of the flower cymes, which are from six to ten inches across, and are composed mostly of fertile flowers, which however do not fruit.

Mr. Knox also exhibited some fine roses, of which he had taken great precautions to keep shaded with cotton from the fierce sun, when under such conditions the blooms lasted much longer.

Mr. Ogilvie had made a good display of roses, and as for the genial President, Mr. A. Alexander, he carried off the most of the prizes, of which he may well be proud; his grounds are a credit to himself and the city, and are well worthy of a visit by the majority of professionals; the cleanliness, taste and care there resorted to is wonderful in a busy business man. He is certainly one that loves flowers, and the term pot-hunter does not apply to him; in other words he does not work up his flowers so as to catch on to a few cent prizes; it is all love with him for the beautiful.

We cannot go further without asking what has become of the gentlemen's gardeners about Hamilton. Can it be that they, themselves, or their masters are unwilling to help along the amateurs, and to instil into the young citizens a love for flowers. The city florists also were not well repre-

sented. I think they could not be looking out for their own interest, for above all others they should try to stimulate a love for flowers, from which they make their living. Again, is it not surprising how few ministers take any interest in flowers. I often thought they should advise the young of their congregations to visit such places as flower shows, and be there themselves to give and receive pointers. It is certainly encouraging to see that we are not all alike in this respect. The City of Hamilton has done a good work on the Gore. Her aldermen must be flower-lovers, for there are great improvements in this line within the past few years. Ontario Government grants are liberal towards such work; City Councils are likewise in beautifying parks and squares. Let us then get the wealthy gentlemen to take an interest, and the clergymen also, and then we will all be good citizens and admire one another's flowers without envious eyes.

Niagara Falls.

R. CAMERON.

Fruit Prospects.

SIR,—Our prospects for an abundant crop of apples and pears and cherries are very promising. The fruit is larger than usual at this season of the year, and seems perfectly free from Black Spot. After two hours' search I did not find a wormy apple. The Codling Moth does not seem so plentiful as last year, although we catch a few occasionally. There are quite a number of new varieties, both in apples and pears, that have fruited this season of which I will report more fully on when the fruit is gathered. According to present appearances our fruit crop will excel any former years both in quantity and quality. A very decided difference is seen between sprayed and unsprayed orchards, both in fruit and foliage. The wood growth on most varieties is healthy and vigorous. The late rains have made all orchards look brighter, and the outlook for a full crop of fruit of all kinds, except plums, is all that can be desired. Grapes, currants, gooseberries and blackberries are quite forward and heavily loaded. We are thinning a number of Keiffer and Bartlett pears in order to keep them from breaking down. The pears received from France are all making good growth and several of the first lot have fruit on them.

Whitby, 12th July, 1900.

R. L. HUGGARD.

Lawns and Walks.

SIR,—Under above heading in July issue of your valuable paper, I notice it is recommended that weeds in gravel walks be pulled up or rough salt or crude carbolic acid be used to kill them. A much simpler and very effective way is to use a solution made with Gillett's Lye. This method is also the correct thing to prevent weeds and grass growing through slat walks, care being taken not to allow the Lye solution to touch the slats of woodwork or the edgings or lawn grass. Gillett's Lye, besides being useful for spraying purposes, can be used to advantage in hundreds of ways around both country and town houses.

Toronto, July 9th, 1900.

SUBSCRIBER.



FIG. 1892. THE CUMBERLAND RASPBERRY.

Photo by Miss Brodie


THE CANADIAN HORTICULTURIST



** SEPTEMBER **

OUR PLANT DISTRIBUTIONS FOR 1900.

THE CUMBERLAND BLACK RASPBERRY.

 ON the 11th of July, we received a basket of fine branches of the Cumberland Raspberry from Mr. W. E. Wellington, grown at Fonthill. Nearly all the berries on each branch were fully ripe, and as Gregg was not yet in the market we were impressed with the earliness of the variety, as well as its evident productiveness. We accordingly took a photograph of it which forms the frontispiece of this number, and have decided to place it on our spring plant distribution list for 1901. The berries are of fine size and good flavor, and these characteristics combined with their earliness and productiveness make the Cumberland a most promising commercial variety. This year it began to ripen at Fonthill about the 5th of July. The plant is thought to be a seedling of Gregg, with a dash of blackberry blood in it. It originated nine years ago with David Miller, of Maryland, and is thought to be the most profitable and deservable market variety yet known. If we are to believe all the introducers say of it, it is the "Business Berry," having immense size, firmness and great

productiveness and wonderful hardiness, enduring without injury, we are told, 16° below zero, (Fahr). In size it is said to be "simply enormous," the berries often reaching $\frac{7}{8}$ of an inch in diameter; those photographs were $\frac{3}{4}$ of an inch in diameter, but the dry season would account for their being a little below size. Now, if the berry equals half what its introducers say of it, surely it is well worth introducing to Canadian Fruit Growers.

SPIRÆA, ANTHONY WATERER,
(*S. Japonica Bumalda.*)

At the same time that the Cumberland Raspberry came to hand, July 11th, we also received from Mr. Wellington a basket of the new Spiræa, which is one of the most desirable of the newly introduced shrubs for the lawn. He writes, "They are quite a sight in the Nursery rows, and they continue blooming till frost comes." The R. N. Y. says of it, "The most satisfactory Spiræa in existence; a constant bloomer. The plant is of low growth, the umbels a bright pink color. A profuse bloomer."

Prof. McCoum, of the Central Experimental Farm, Ottawa, writes the following description of it: "Origin, Europe; height, 1 foot; begins to bloom first week in July, and continues in flower a long time. Flowers, a bright, purplish red, borne in compact heads. One of the prettiest dwarf shrubs yet tested at Ottawa."

The members of the Ontario Fruit Growers' Association will be pleased to learn that these two plants, the Cumberland Raspberry and the Spiræa, Anthony Waterer, have been selected for the plant distribution in the spring of 1901, and our subscribers will have an opportunity of testing them.

TO REMOVE FRUIT STAINS from enamel saucepans use chloride of lime. Fill the saucepan with cold water, add one teaspoonful of chloride of lime to each half gallon, and boil until the stain is removed.—*Rural New Yorker.*



FIG. 1893. SPIRÆA, ANTHONY WATERER.

CURRANTS IN 1900.



FIG 1894. VERSAILLAISE (REDUCED).

FOR a few years past Currant growing has gone somewhat out of favor owing to the low prices prevailing. Fortunately for the grower a much more encouraging state of things prevails, and instead of 3 or 4 cents a quart, they are now worth in our best markets 5 and 6 cents, which leaves a good margin to the grower, even after expenses of sale are deducted. The acid of the currant is counted very wholesome, and in summer season the free use of currants, either fresh, spiced, or in jelly, is worth far more to the human system than most people imagine.

In our grandfathers' gardens currants were usually grown against the fences and often left unpruned or uncultivated, and the old Red Dutch was almost the only variety



FIG. 1895. FAY (REDUCED) SHOWING PRODUCTIVENESS.

known. The quality was excellent, for it had a brisk, sprightly, mild acid flavor, which gives it first rank ; but its small size made it a poor market berry, and slow of harvesting.

Now a great change has come over currant cultivation. With the advent of the Cherry currant, so large in berry that it captivated the buyer, and so easy to gather as to reduce the cost of harvesting, there came a great impetus to planting, some asserting that \$200.00 an acre was a common return for the crop. Then came Fay's Prolific with a wonderful flourish, and everybody planted it ; and now several others contest the first place for the commercial garden.

To determine the best variety of each color for our Ontario fruit growers to plant was the purpose of the Provincial Department of Agriculture in starting a Small Fruit experiment station at Burlington, in charge of A. W. Peart, who has now sixteen varieties of Red and White Currants in bear-

ing. On the 23rd of July the writer visited this station and found Mr. Peart quite ready to leave the interests of his four hundred acre grain farm to take us through his experimental plots on plums, pears, peaches, grapes and small fruits. In looking over his currants we found his Fays very fine, with bunches about four inches in length. The bush is not equal to that of the Cherry in vigor or endurance. The illustration, Fig. 1895, shows excellent fruiting habit, in which point there is little to choose between the two varieties, the latter of which is of European and the former of American origin. Very similar to these two popular varieties is the Versailles, from France, differing from the two former in having berries of less uniformity in size, and on the whole averaging smaller. Some of the bushes at Mr. Peart's were a marvel of productiveness, and we thought it worth while to take a snap to show their manner of fruiting. (Fig. 1894.) Belle de St. Giles, Fig. 1896, is a magnificent looking currant, so large and fine, but it does not appear to be as productive as the varieties mentioned above. The



FIG. 1896. BELLE DE ST. GILES (REDUCED.)



FIG. 1897. RED CROSS (REDUCED).

Wilder, in Mr. Peart's opinion, is the finest market currant in his collection. The bunches and berries are of the largest size, larger than either Fay or Cherry, and quite equal to those of the St. Giles, and in his opinion it is more productive than any of them and better in quality. Fig. 1899.

Fig. 1897 shows a fruiting branch of the Red Cross Currant, one of the newest varieties which was originated by Jacob Moore. It has little to distinguish it from Fay or Cherry in its size and appearance. Mr. Green, the introducer, says, "It makes twice the growth that these varieties make; the fruit is often so dense on the stalks as to hide the leaves entirely from view. Color bright red; berries set in a compact cluster with long stems; convenient for picking." Mr. Peart in his report for 1899 says the bush is medium in vigor and moderately productive. Another season's trial may settle the character of this variety with greater certainty.

Of the white varieties, the long bunch Holland has impressed us most favorably at

Maplehurst, the bush is so healthy and the bunch and berry so large. Bnt Mr. Peart places the White Imperial, Fig. 1898, at the head of his list of white currants. It is not quite as large a berry as the Holland and shorter in bunch, but perhaps it is more productive, and it has a mild pleasant flavor. There is no use planting white currants for profit, as there is little demand for them in the market, so that we can only recommend them for home uses.

The pruning of the red currant is so important that we add a few remarks thereon. The old method of training in tree form has been long given up by us, because the borer often destroys the old stem, and new shoots are needed to take its place. We always allow a half dozen shoots to grow from the root, cutting out the older stems from time to time. Those that remain we spur prune, cutting back all laterals to two or three buds, a treatment that will result in the formation of fruit spurs along the whole length of the main branch.



FIG. 1898. WHITE IMPERIAL (REDUCED).



FIG. 1899. WILDER (NATURAL SIZE).

THE REPORT ON GRADING APPLES.—D. S. Beckwith, of Albion, N. Y., Chairman of the Committee on Grades, presented a report to the National Apple Shippers of the U. S., which was adopted in the following form :

“Resolved that the standard for size for No. 1 apples shall not be less than $2\frac{1}{2}$ inches in diameter, and shall include such varieties as the Ben Davis, Willow Twig, Baldwin, Greening and other varieties kindred in size. That the standard for such varieties as Romanite, Russett, Wine Sap, Jonathan, Missouri Pippin and other varieties kindred in size shall not be less than $2\frac{1}{4}$ inches, and furthermore that No. 1 apples shall at time of packing be practically free from the

action of worms, or defacement of surface or breaking of skin ; shall be hand picked from the tree and be of a bright and normal color and a shapely form.

“No. 2 apples shall be hand picked from the tree ; shall not be smaller than $2\frac{1}{4}$ inches in diameter. The skin must not be broken or the apple bruised. This grade must be faced and packed with as much care as No. 1 fruit.”

Every member of the National Apple Shippers' Association is requested to incorporate the above resolution in their apple contracts for this year and, as far as possible, use such grading when picking.—*Fruitman's Guide*.

POLLINATION IN ORCHARDS.

Varieties which are often self-sterile.

SELF-STERILITY is not a constant character with any variety. It is influenced by the conditions under which the tree is grown, as are the size, shape and color of the fruit. The adaptation of a variety to soil and climate has much to do with its self-sterility, and if a tree is poorly nourished it is more likely to be infertile with its own pollen. No one can separate varieties of fruit into two definite classes, the self-sterile and the self-fertile. Thus Bartlett and Kieffer are often self-sterile, but there are orchards of both which are self-sterile. The same may be said of many other varieties. The best that can be done, therefore, is to give a list of those varieties which *tend* to be more or less self-sterile and which it would be unsafe to plant alone.

Following is a conservative list of these risky varieties, drawn both from experimental work and from the reports of over five hundred fruit growers, who have favored me with their experience. *Pears*: Angouleme (Duchess), Bartlett, Clapp, Idaho, Kieffer, Nelis. *Apples*: Bellflower, Primate, Spitzenburg, Willow Twig, Winesap. *Plums*: Coes' Golden Drop, French Prune, Italian Prune, Kelsey, Marianna, Miner, Ogon, Peach, Satsuma, Wild Goose, and according to Waugh and Kerr, all other varieties of native plums except Robinson. *Peach*: Susquehanna. *Apricot*: White Nicholas. *Cherries*: Napoleon, Belle de Choisy, Reine Hortense. Most of these varieties are self-fertile in some places, but the weight of evidence shows them to be uncertain.

It must not be inferred that all other varieties are always able to set fruit when planted alone. There are some, however, which have exceptionally good records for faithfulness when planted in solid blocks, other

conditions being favorable. Among these are: *Apples*: Baldwin, Ben Davis, Fallawater, Janet, Oldenburg, Rhode Island Greening, Red Astrachan, Smith Cider. *Plums*: Burbank, Bradshaw, DeSoto, Green Gage, Lombard, Robinson and some of the common blue Damsons.

All this goes to show that the problem of self-sterility is as much a study of conditions as of varieties. We can set no limit; we can only indicate tendencies.

Many large blocks of Kieffer are being planted with no other varieties intermingled, and it is an important point to know whether this practice will give the best results. Eight blocks of Kieffer in New Jersey and Delaware have been reported as completely or partially unfruitful because of self-sterility, and there are also many solid blocks of Kieffers in the same States which bear well. Kieffer is unreliable, especially on the Delaware peninsula. A large block of Kieffer may be productive, but it does not pay to take the risk, particularly since the pollen of other varieties is likely to give better fruit, as will be seen later on.

SELECTING THE POLLINIZER.

Let us suppose that we intend to plant a large block of an uncertain variety, as Kieffer, because it has distinct merits as a market sort. We wish to plant with it some other variety to make it fruitful. There are two points to be considered when selecting a pollinizer for Kieffer or for any other self-sterile variety; the choice should not be indiscriminate. These are simultaneous blooming, and mutual affinity.

The first and most important point is that the two shall blossom together, since the only way in which a pollinizer can make a self-sterile variety fruitful is by supplying it

with pollen. This means that the pistils of the self-sterile variety must be receptive when the stamens of the pollinizer are ripe, which is possible only with simultaneous blooming.

The comparative blooming of varieties is more or less a local problem. Differences of latitude, altitude, soil, nearness to large bodies of water, and weather conditions during the blooming season not only hasten or retard the time of blooming but also disturb the order in which the different varieties open. Varieties blossoming together at one place may not another. The best that can be done in the way of generalizing on the question of simultaneous blooming for cross-pollination is to make a chart for each well marked geographical district. To this end several hundred fruit growers have kindly taken notes the past two seasons, and when sufficient data is collected these charts may be published. They will indicate in a general way which of our standard commercial varieties may be expected to bloom together; yet each fruit grower should be prepared to make minor corrections for his own farm. Until more definite knowledge is available, each orchardist should learn how varieties bloom in his own neighborhood before planting them for cross-pollination. It is better, but not always necessary, that the two should bloom exactly together; if they overlap two or three days that is often enough.

It is sometimes desirable to plant varieties of different botanical species together for cross-pollination, but this will often be impracticable because of the difference in their blooming seasons. Thus the Oriental pears, as Kieffer, and the European pears, as Bartlett, usually do not blossom together. Kieffer generally blooms several days before Bartlett, hence it necessary to pollinate it with a variety of its own class, as Le Conte or Garber. In some places, however, the two groups blossom approximately together, and then varieties like Bartlett and Seckel should

be used in preference to Le Conte or Garber, since their fruit has a greater market value and the trees are less likely to blight. Whenever the European pears are used as pollinizers for Kieffer it would be well, if otherwise practicable, to work them on quince roots. Standard Kieffers will often bloom two or three years before standard Bartletts planted at the same time, and unless early blooming dwarfs are intermingled they may be unproductive these first few years.

The three classes of commercial plums—Japanese, domestic and native—will usually bloom at different periods in the order named; but when a "spell" of warm weather succeeds a cold and backward spring, varieties of all these groups will come on nearly together and cross-pollination will result. In some places the blooming seasons of these groups overlap so that some varieties of each might be used regularly for cross-pollination.

THE MUTUAL AFFINITY OF VARIETIES.

Another point to be looked after when selecting a pollinizer for Kieffer, or for any other self-sterile variety, is the mutual affinity of the two. That is, will the pollen of the pollinizer fertilize the pistils of the self-sterile variety readily and also develop them into high grade fruit? At present but little is known about the matter. Taking first the possibility of cross-pollination between varieties of different species, there seems to be no doubt but that many varieties of native Japanese and domestic plums will fertilize each other. Orchard experience in many places indicate this; as when Satsuma is used to pollinate Coe's Golden Drop in California prune orchards. Several successful crosses between the three were also made at Ithaca the past season. Amongst these are Abundance \times Grand Duke (Fig. 1903), Georgeson \times Wayland, Berckman \times Coe Golden Drop, Coe Golden Drop \times Satsuma. That

is, if we wish to use Satsuma as a pollinizer for Coe Golden Drop, or Lombard for Wild Goose, the probability is that the combination would work, if the two varieties bloom together ; but since the three groups usually bloom at somewhat different periods there be no general cross-pollination outside the limits of the species.

Numerous crosses and common orchard practice have also shown that the European pears, as Bartlett, and the Sand Pear hybrids,

Fig 1900, compare the size of the Seckels which received Kieffer pollen with those which had Lawrence pollen. The specimens shown are typical of thirty fruits secured from these two crosses in 1899.

It is necessary to study not only the mutual affinity of varieties belonging to different species, but also of varieties of the same species. Some varieties will not fertilize each other, though blossoming at the same time. Kerr has found that Whittaker plum



FIG. 1900.—SECKEL. FROM KIEFFER POLLEN ABOVE, FROM LAWRENCE POLLEN BELOW.

as Kieffer, will fertilize each other regularly when they bloom together. Several Kieffer fruits from Bartlett pollen and Bartlett fruits from Kieffer pollen were secured in the crossing work of 1899. In fact, my experience has been that if Kieffer pollen is put on the pistils of our common pears, of the European class, it will usually produce larger fruit than pollen from most varieties of that type. Kieffer is a good pollinizer for Bartlett, Angouleme, Clapp, Nelis and the like varieties, when they bloom together. In

will not fertilize Wild Goose nor will Early Red help Caddo Chief. Again, the pollen of some varieties will give better fruit than that of others when used on the pistils of self-sterile or even on self-fertile varieties. There is very little definite knowledge as to what varieties are best adapted for pollinating self-sterile sorts. Waugh and Kerr have studied this point with native plums for several years and their judgment is united in a table of recommended pollinizers for plums (12th Report Vt. Ag. Ex. Sta.) A few results

from crosses made at Ithaca in 1899 will illustrate this point. Fig. 1900 shows the comparative size of Seckel when pollinated with Kieffer and with Lawrence pollen. Clapp pollinated with Kieffer was also larger than Clapp pollinated with Lawrence or Louise Bonne. Howell blossoms which received the pollen of Clapp gave fruits of nearly twice the size of those which received Bartlett pollen. Bartletts crossed with Angouleme were larger than Bartletts crossed with Sheldon. In some cases no difference could be noticed, yet most of our standard commercial varieties will be likely to yield

Prune, Green Gage, Italian Prune (Fellenburg); Satsuma with Abundance, Burbank, Red June; Miner with De Soto, Forest Rose, Wild Goose; Wild Goose with De Soto, Newman, Miner.

DOES CROSSING CHANGE THE APPEARANCE OF THE FRUIT?

In connection with mutual affinity of varieties which are selected for cross-pollination, there comes the question of the "immediate influence" of pollen. For instance, if Seckel pollen is put on Kieffer pistils, will it impart the Seckel flavor, color and characteris-

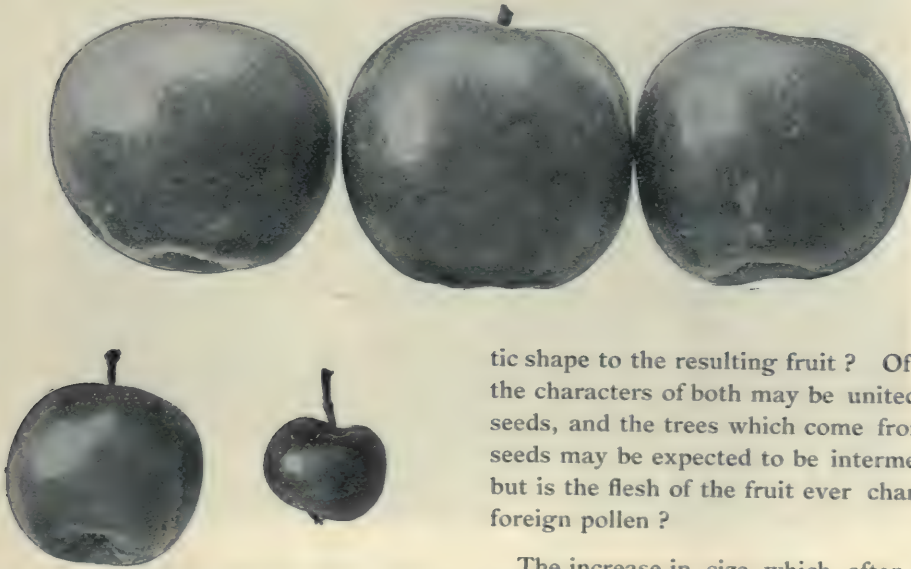


FIG. 1901.—Stark. From Wagener pollen above, from Stark pollen below. Marked benefit from cross-pollination.

enough better fruit when planted with some varieties than with others, to make a study of this point worth the while.

Some of the combinations which have been very successful in the commercial orchards of the country are: Bartlett with Nelis, Flemish Beauty, Easter, White Doyenne; Idaho with Bartlett; Kieffer with LeConte, Garber; Coe Golden Drop with French

tic shape to the resulting fruit? Of course the characters of both may be united in the seeds, and the trees which come from these seeds may be expected to be intermediates; but is the flesh of the fruit ever changed by foreign pollen?

The increase in size which often follows crossing cannot be called a true immediate influence, for the foreign pollen generally stimulates the fruit to be a better growth because it is more acceptable to the pistils, not because it carries over the size-character of the variety from which it came. In 1899, Hyslop Crab pistils which were fertilized with pollen from the great Tompkins County King, grew into fruits of the usual crab size. An immediate influence in size may be possible, for the size of the fruit is nearly as constant a varietal character as is the shape;

but most of the increased size in crosses of orchard fruits probably arises from the fact that the pollen is more acceptable.

Setting aside the usual gain in size resulting from crossing, we wish to know whether there will be any change in the shape, color, quality and season of ripening of the fruit. A few undoubted instances of this influence have been noticed with some plants in which

ence of pollen from observation, rather than from experimental proof. It does not necessarily follow that "sweet and sour" apples are due to cross-pollination, nor that the russet on Greening apples borne on the side of the tree next a Roxbury was produced by the influence of the Roxbury pollen.

Most of the changes in fruit which are attributed to the influence of cross-pollina-



FIG. 1902.—LONGFIELD. FROM GREENING POLLEN BELOW, FROM LONGFIELD POLLEN ABOVE. MARKED BENEFIT FROM CROSS-POLLINATION.

the seed is the principal part of the fruit, as the mixing of sweet corn and field corn; also perhaps in various peas and beans. When the seed is surrounded by a fleshy pulp, however, as in our common orchard fruits, it is still in dispute whether this pulp is influenced, however much the seeds themselves may be. Most men have formed their convictions about the immediate influ-

tion are due to variation. Every bud on a tree is different in some way from every other bud on that tree and may develop unusual characters, independent of all the other buds, according to the conditions under which it grows.

The best way to determine whether there is an immediate influence of pollen is by hand crossing. Among the forty-five different

crosses which were made in 1899 with this particular point in view, not one showed any change which could be positively attributed to the influence of pollen. Even the concentrated sweetness of Seckel made no impression on the poor quality of Kieffer; nor were there any constant differences in color, shape or season of ripening in any of the other crosses. Nearly everybody who has crossed varieties of orchard fruits has had a similar experience.

Most of the evidence supporting the theory that there is an immediate influence of pollen

sometimes exerted. But it is certainly much less frequent than is commonly supposed.

THE DISTRIBUTION OF THE POLLINIZERS.

Having selected a pollinizer with reference to simultaneous blooming and mutual affinity, the fruit-grower now wishes to know how many trees will be necessary to pollinate the self-sterile variety. There are three things to be considered here: The ability of the pollinizer to produce pollen, its market value and the class of fruit to which the self-sterile variety belongs.



FIG. 1903—ABUNDANCE. FROM ABUNDANCE POLLEN ABOVE, FROM GRAND DUKE POLLEN BELOW. SOME BENEFIT FROM CROSS-POLLINATION.

in the crosses of fruits comes from observation; most of the evidence against it comes from experiment. The observer, however careful, is likely to jump at conclusions; the experimenter tries to give due weight to every influence which might bear on the problem. Since many observers and a few experimenters have found what seems to be an immediate influence of pollen on the fruit, we cannot doubt but that this influence is

Varieties differ in the amount of pollen which they produce, and the pollen production of the same variety is also greatly modified by differences in locality and season. Other things being equal, the variety which produces pollen freely could be used more sparingly in a block of self-sterile trees than one of scanty pollen production. Little comparative observation has been made on this point as yet; but as a matter

of fact, most of our common varieties produce an abundance of pollen.

The number of trees of the pollinizer would also depend largely on whether it has value itself. If we are planting LeConte to pollinate Kieffer, we would naturally try to get along with the least possible number which will do the work ; but if Bartlett's are to be used for the same purpose, we can afford to increase the proportion. Some

during the bright weather between showers. If using Garber or LeConte to pollinate Kieffer, every third row may be the pollinizer ; if using Bartlett, every other row. For apples, cherries and domestic or Japanese plums, the same proportion may be used. In a commercial orchard, the pollinizer should be planted in a solid row. Theoretically, it is much better to have the pollinizer more evenly distributed among the

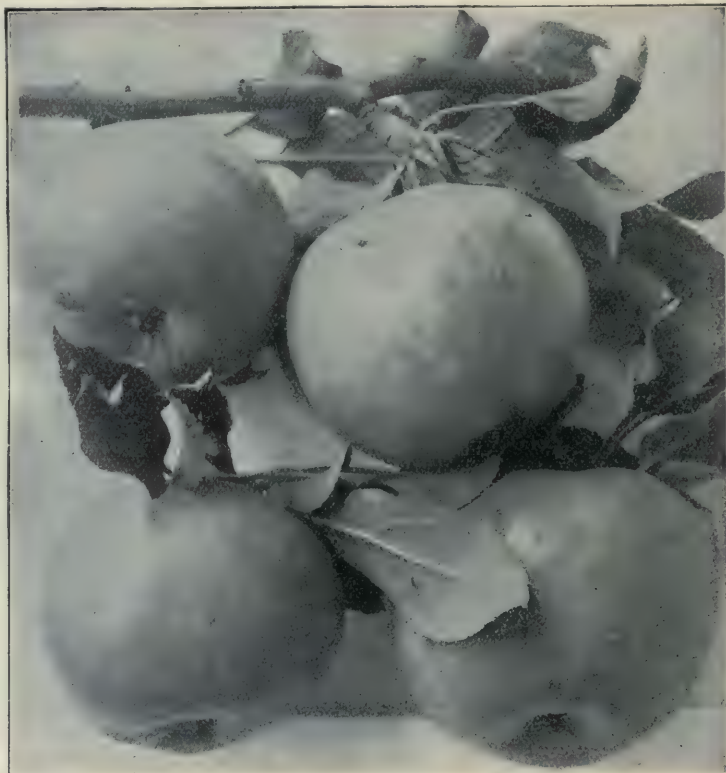


FIG. 1904.—TALMAN SWEET. FROM TALMAN SWEET POLLEN ABOVE, FROM WAGENER POLLEN BELOW. NO BENEFIT FROM CROSS-POLLINATION.

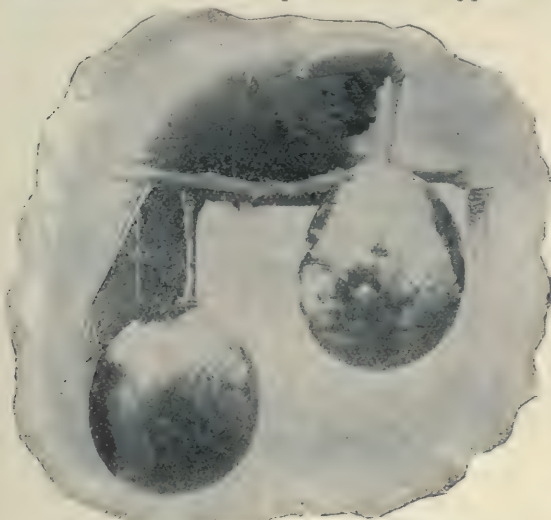
growers plant every tenth row to the pollinizer, but the proportion should usually be greater. This might be enough if the weather during the blossoming season is very favorable for cross-pollination by wind and insects ; but if it is showery, the pollinizers should be more abundant, in order that cross-pollination may be more general

self-sterile trees ; practically, it will not pay to so mix them except in small orchards.

THE ADVANTAGES OF GENERAL MIXED PLANTING.

It would appear that the only thing to do now is to find out what varieties are inclined to be self-sterile and the varieties

which are best adapted for fertilizing them. But as a matter of fact, cross-pollination gives better results with nearly all varieties, be they self-sterile or self fertile. A variety may be able to bear good fruit when it is planted alone, but it will often bear better fruit if suitable varieties are near it. Mixed orchards are more productive than solid blocks, taking the country over. It is a common observation in Western New York that Baldwins in mixed orchards are more uniformly productive than Baldwins in large blocks. Furthermore, although a variety may be able to set an abundance of fruit with its own pollen, this fruit will often be smaller than if other pollen were supplied.



1905--BRADSHAW PLUM. FROM GERMAN PRUNE
POLLEN ABOVE, FROM BRADSHAW POLLEN BELOW.
NO BENEFIT FROM CROSS-POLLINATION.

From a number of experiments made in 1899, a few representative results are here given to illustrate this point.

Compare the size of self-pollinated and cross-pollinated fruits in our illustrations. In some varieties the differences were very marked, as with Stark and Longfield apples (Fig. 1901-2); in others the difference was not so marked, as Abundance (Fig. 1903); while a few showed no appreciable increase in size

from cross-pollination, as Talman Sweet and Bradshaw, (Fig. 1904-5). The difference between the cross and self-pollinated Starks and Longfields is so striking that one would almost be tempted to think the self-pollinated fruits were wormy, but they are not. The self-pollinated Talmans and Bradshaws were apparently as fine in every way as the cross-pollinated fruits. Manning Elizabeth pear also was not benefited by pollen from other varieties.

The three self-pollinated Longfields here shown (Fig. 1902) have but five sound seeds; while the two crossed specimens had seventeen sound seeds. In general, cross-pollinated fruits have more good seeds than self-pollinated fruits, but there is no constant relation between the size of a fruit and the number of seeds it contains. Some of the biggest apples or pears may have only two or three good seeds. In case the ovules in one cell of an apple or pear core are not fertilized, that part of the fruit adjoining is often stunted and the fruit becomes lop-sided in consequence; but this likewise, does not always follow.

All of the above varieties are self-fertile, at least in Ithaca. They will produce fruit with their own pollen. But we have seen that some of them will produce better fruit if other pollen is supplied. Is it not worth while, then, to plant pollinizers even with self-fertile varieties—that is, to practice mixed planting with all varieties? There are three good reasons for doing this: First, some believe that self-sterility is likely to increase in the future, under the stimulus of right cultivation. Second, we can never be perfectly sure that any variety will be self-fertile on our soil and under our culture; even those varieties which are self-fertile elsewhere may be partially self-sterile with us. Third, most self-fertile as well as self-sterile varieties are benefited by cross-pollination. It is taking risks to plant a very large block of one variety. The trees

may bear just as much and just as fine fruit as though other varieties were with them, but the chances are against it.

THE POLLEN-CARRIERS.

The pollen of one variety is carried to the pistils of another in two ways : by the wind and by insects. There are many kinds of insects which aid more or less in the cross-pollination of orchards fruits, principally bees, wasps and flies. Of these, the wild

bees of several species are probably the most important. In a wild thicket of plums or other fruits, they are usually numerous enough to insure a good setting of fruit. But few if any wild bees can live in a large orchard, especially if it is well tilled. As the extent and thoroughness of cultivation increases, the number of these natural insect aids to cross-pollination decreases ; hence it may become necessary to keep domestic honey bees for this purpose.

This article, with cuts, is kindly furnished by the Cornell University Experiment Station.

LAYING OUT HOME GROUNDS:

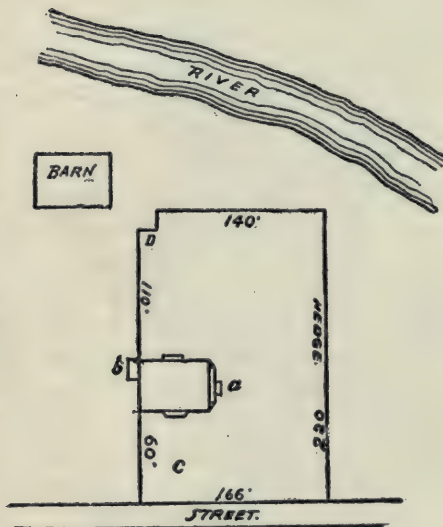


FIG. 1906. GROUNDS BEFORE PLANTING.

a, Front door ; b, back door ; c, croquet grounds ; d, seat.

Prof. Maynard in *American Agriculturist* gives a reply to a correspondent, describing the best method of improving his grounds by planting and arrangement of walks ; and as we so often have similar enquiries we give our readers his reply in full.

Fig. 1906 represents the grounds before laying out or planting. In Fig. 1907, the same grounds after planting are

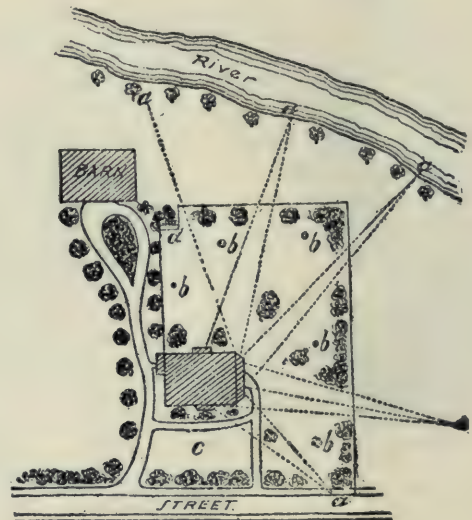


FIG. 1907. GROUNDS AFTER PLANTING.

a, Open vistas to pleasing views ; b, covers for objectionable objects ; c, croquet grounds ; d, seat.

shown. The entrance or gateway that leads to the front door is placed on the street line about midway of the street front, the walk running in nearly a straight line to the center of the front of the house, the dismounting block or step being at the street edge.

A drive might be run from this point to the front of the house, where a turn-round

could be made, or it could continue by a graceful sweep to the stable and end in a turn-round as in Fig. 1907. The distance, however, from the street to the front steps is not too much for anyone but an invalid to walk easily, and as a drive must be maintained in the rear, it would serve both purposes and save the front lawn from disfigurement, and also save a great deal of expense in construction and repairs. Walks or drives possess no real beauty. They are expensive to build and to keep in repair and no more should be maintained than are absolutely necessary.

In grouping trees and shrubs, the principles to be followed are to so arrange them that as many as possible of the beautiful features of both near and distant views will be preserved and improved by the grouping, and all unpleasant features covered up. The dotted lines from the principal points of view at the dwelling and focusing at the points *a a*, etc., show how the beautiful outlook or important points may be kept in

view, while the groups at or near *b* show how such objects as are undesirable may be hidden from view. These lines show also from what points outside of the grounds pleasing views may be had of the dwelling and its surroundings, a feature not to be overlooked.

The barn, which is in most cases not an object to be made conspicuous, but rather to be somewhat secluded, is covered by the trees and shrubs grouped along the drive. The seat, *d*, is represented in full view, with trees over and in the rear of it, but if desired it could be easily secluded by arranging some of the groups in front of it. The croquet grounds, *e*, are hidden from the street by a border of large shrubs, but are in full view from the dwelling.

In planting groups of trees and shrubs, the largest and tallest should be set in the center, with the smaller ones on the borders and as much variety and beauty as is possible secured in their arrangement.

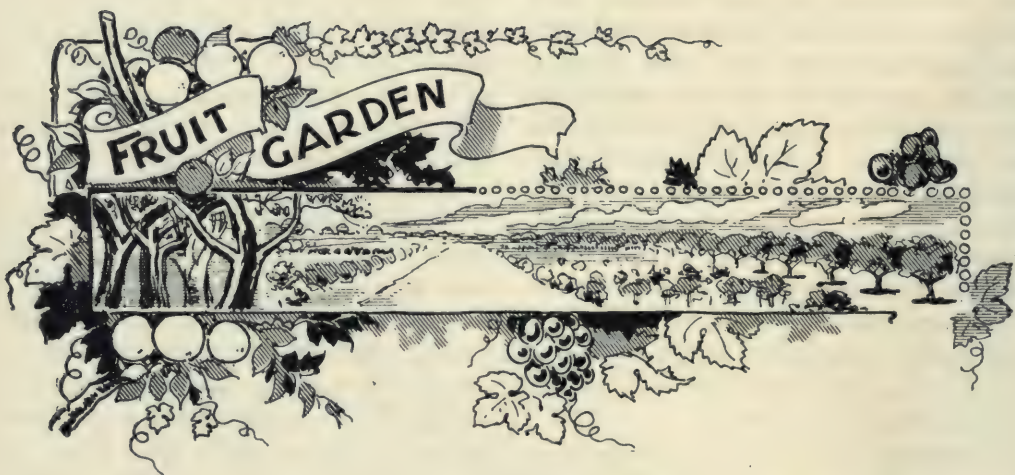
HOW TO MARKET GOOSEBERRIES—Gooseberries may be marketed either green or ripe. Some growers pick the smaller fruits green and allow the finest fruits to ripen. This is less exhausting for the bushes than it is to allow the whole crop to ripen. Others market the entire crop green, a method least exhausting to the bushes, and it also has this in its favor that the sooner the crop is in the market the less risk there is of its injury by sun-scald, mildew or other fungous or insect trouble. Each grower must determine for himself according to his local market conditions what method of handling the fruit is best for him. Green gooseberries are stripped from the branches quite rapidly. They may then be run through the fanning mill if necessary to free

them from leaves, sticks, etc., and then packed for market.

The style of package will be usually determined by the market demand. Some of the European sorts are best to grow for green gooseberries, because they attain considerable size very early in the season. Among the best sorts for this purpose are Industry (Whinham's Industry), Crown Bob and Lancashire Lad. These are red varieties and are favorite market sorts in England, either green or ripe. The Whitesmith is a white variety, excellent quality and productive. Wellington's Glory is also very productive, fruit large, yellowish, nearly white, and handsome in appearance.

New York.

S. A. BEACH.



FRUIT CULTURE—VII.

THE GRAPE.

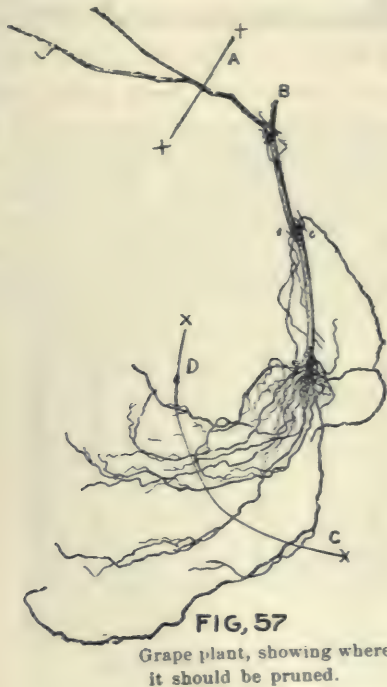
NOTWITHSTANDING the fact that there are some four millions of grape vines in Ontario, many farmers even yet do not grow a single pound of this fine fruit, especially in the northern and eastern parts of the Province, where the difficulties of grape culture are supposed to be greater than they really are. The professional vineyardist of Southern Ontario who counts his vines by the thousand has possibly not a great deal to learn. The difficulty now is not so much the production of the fruit as the finding of a good market. But scattered through all parts of the country are people who own small vineyards which are by no means producing a high quality of fruit, and still others who, buying few or no grapes, yet have no vineyard of their own. It is to these classes more than to the commercial grower that the following remarks on grape culture are directed.

SOIL AND EXPOSURE.—The best site for a vineyard is a gentle slope facing to the south or southeast. In the low levels there is more danger from frosts, and on a northern exposure there will be some difficulty in ripen-

ing the later varieties. The grape loves a rich, warm and dry soil. The preparation of the land should include underdraining if the subsoil is at all wet or non-porous. It will thrive on sandy or gravelly soils, but on the very light soils there is a greater tendency to disease, especially to mildew. A rich, well-drained clay loam is the most satisfactory. The general opinion is that the quality of the fruit is higher on the heavier ground, though Fuller asserts the contrary.

PLANTING AND CULTIVATION.—Vines of the strong-growing varieties, like Niagara and Rogers, may be planted as one-year-olds. As a general rule strong two-year-old vines are the best to plant. Varieties like Delaware, Catawba and Moore's Early may be planted eight feet apart, but as most vineyards contain many of the strong-growing kinds which require more room, a good distance would be ten or eleven feet each way. This would allow convenient cross-cultivation before the trellis is put up, and give ample room for harrow, wagons, etc., between the rows later on. The vine should be planted fairly deep and the earth well packed

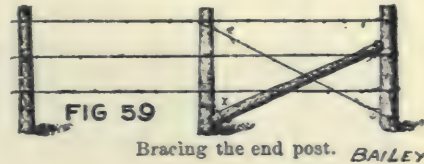
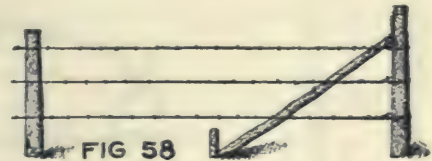
round the roots. If the roots are coarse and long cut back to about eighteen inches. Prune the top down to two three buds. Fig. 67, from Bailey's "Pruning Book," illustrates the pruning of one type of two-year-old vine. The top should be cut at A and B, the upper roots trimmed off at c and D, and the main roots cut in from E to F. Hoed crops can be grown the first three years between the young vines and thorough cultivation given. By the late fall the young vine should have made a growth of three or



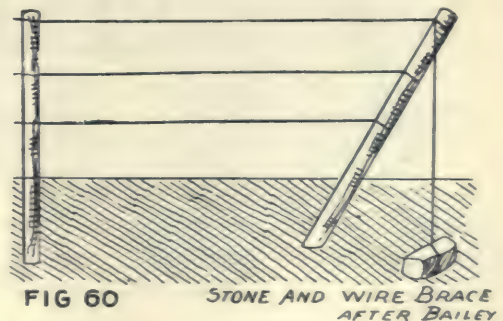
four feet, and should then or in the spring be pruned to a single cane and that cane should be cut back to two or three buds. The trellis may be put up the second spring or left till the third. The young vine having got thoroughly established during the first summer will, under good conditions, make a vigorous growth the second year, not more than two canes being allowed to grow. We now come to the end of the second season,

the treatment up to this time being practically the same whatever style of trimming may be adopted.

THE TRELLIS.—Various kinds of trellises have been in vogue at different times, but we need only here consider the post and wire method. Cedar or chestnut posts should be used. These can be eight feet long, sharpened at one end and driven down



with heavy maul eighteen inches or two feet. This is the practice in the famous Chatauqua grape district. Or the posts may be nine feet long and a post auger used for the holes, which should be three feet deep. Two, three or four wires are used, according to the system of training. No. 12 wire is a suitable size, except in the two-wire trellis,



when No. 10 wire should be used for the upper wire and No. 12 for the lower. Figs. 58, 59 and 60 show different ways of bracing the end post, upon which the heavy strain comes. Of these Fig. 59 is decidedly the

best. Either of the others will, however, be satisfactory where the rows are not too long. The posts should be set about twenty-five or thirty feet apart, two or three vines between the posts.

TRAINING.—Four systems of training are practised among vineyardists, each of which has its warm advocates :

1. The horizontal arm and spur system.
2. The Kniffen system.
3. The high renewal.
4. The fan.



FIG. 62.

No hard and fast rules, however, can be laid down in this matter and various modifications of the many systems may be seen in all vineyards. "All intelligent pruning of the grape," says Bailey, "rests upon the fact that the fruit is borne in a few clusters near the base of the growing shoots of the season, and which spring from wood of last year's growth. A growing leafy branch of the grape vine is called a *shoot*; a ripened shoot is called a *cane*; a branch or trunk two or more years old is called an *arm*."

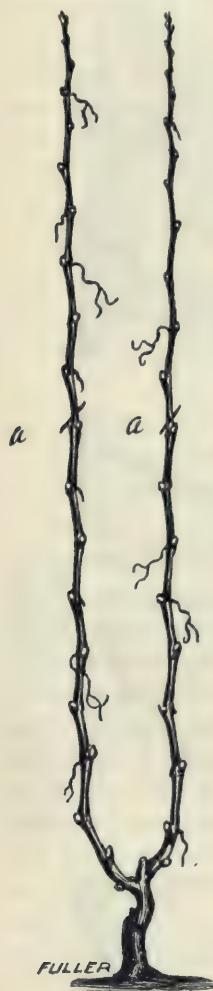


FIG 61



FIG 63 (FULLER)

The horizontal arm and spur method—called the *Fuller* system—is well suited for cold sections, where vines have to be laid down for the winter, and may be first dealt with. Fig. 61 represents the young vine at the end of the second season. The two canes are cut back at *a, a*, and bent down and covered for the winter, Fig. 62. In the spring the two arms are tied along the lower wire. A shoot will spring from each bud on

the canes, and at the end of the third season the vine will be as at Fig. 63. The vine is now pruned, the canes being cut back to a spur of two buds. As two bearing shoots will spring from each spur in the fourth season the arms may be slightly shortened so as to leave not more than five spurs on each arm. In the early summer any superfluous shoots that may have forced out from the trunk or arms, and all laterals or side shoots,



FIG. 64

which usually spring from the base of the regular shoot, should be removed and the ends of the main shoots should be pinched when the top wire is reached. At the end of the fourth summer there will be twenty canes, two from each spur. Every alternate cane will be cut off as close to the arm as possible, and the other cut back to a

THE HIGH RENEWAL SYSTEM.—In this system three wires are used, the lowest about eighteen inches or two feet from the ground and about the same distance between the wires. In the second season a single shoot or two shoots forming a Y trunk are tied to the wire, and in the third spring are tied along the wire, somewhat as



FIG. 65. High renewal before pruning. CARLOWAN. BAILEY

spur of two buds—see Fig. 64. So that, as before, twenty bearing shoots will be provided for.

This, briefly, is a sketch of the horizontal arm and spur system. It necessitates more tying than other methods of training, but has many excellent features.

in the Fuller system. At the end of the third season the vine presents the appearance of Fig. 65. Instead of leaving two permanent arms and cutting back to spurs, as in the Fuller method, the old arms are cut away and two vigorous canes bent down. Two stubs, or long spurs, are also left, from which canes will be selected to form arms



FIG 66 High renewal, pruned and tied. BAILEY

for another year—see Fig. 66. There is thus, in this system, a constant renewal of all wood except the main stem or trunk. The number of buds (from which the fruit-bearing shoots come) left on a vine after pruning would be from 25 to 30.

THE KNIFFIN SYSTEM.—This is perhaps the most popular method of training the vine amongst commercial growers, and is a system which, with various modifications, will probably be generally adopted in all large vineyards. The advantages that it possesses are three—it permits a cheaper trellis, there being only two wires employed; it necessitates no summer tying, the shoots being allowed to hang free; and it affords greater facilities for cultivating the

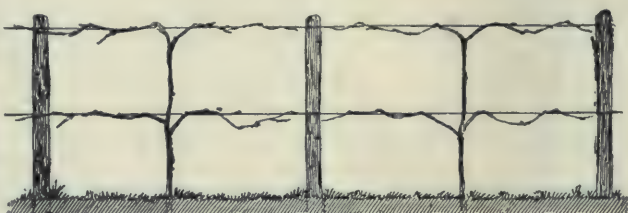


FIG 69

ground beneath the vine. All these things make for cheap production and, with present prices for grapes, cheapness of production has to be very earnestly considered. In the true Kniffin system two wires are used, the lower about three and a half feet from

the ground, and the upper about five and a half feet. In the third spring a single strong cane is tied to the top wire and also to the lower. This cane will form the permanent trunk. At the end of the third season there will be eight or nine good canes on the main stem. Two of the upper ones are selected and cut

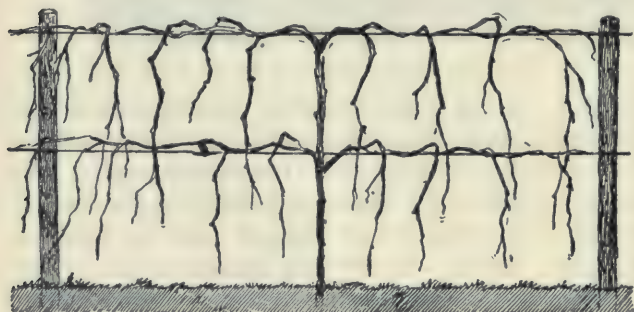
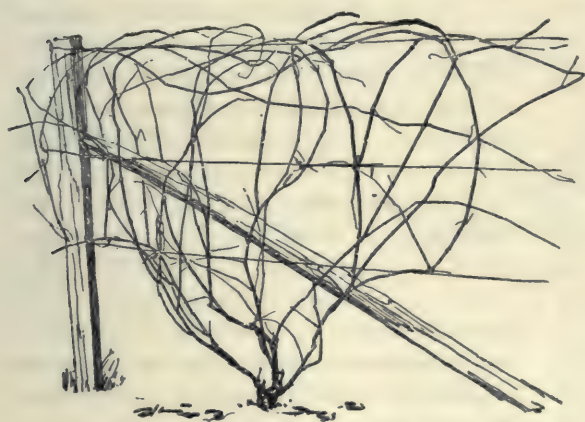


FIG 70

back to about eight buds each and tied to the wire. Two others, with five or six buds each, are tied along the lower wire, as in Fig. 69. At the end of the fourth season the vine will present the appearance in Fig. 70. The same process will then be repeated. Four strong canes will be selected and tied for the fifth season, as in Fig. 69. After a time the cutting back operation will leave a stubby, awkward lot of old wood where the horizontal canes start. It will then be wise to take, at the first opportunity, a shoot direct from the main stem and train it as an arm, cutting away all old wood that has gradually collected between the trunk and the horizontal canes. It will be noticed also that the Kniffin system simplifies pruning very much. There is no desire to urge here that the Kniffin system will give better re-



Fan-trained Concord. FIG. 67

sults than many other methods in operation. In many vineyards a combination of Kniffin and the Fan system is giving good results, but, properly managed, the Kniffin-trained vineyard will yield as well as any, and nobody can question its greater cheapness and the conveniences it presents. Success can be achieved with all systems, and in this matter of grape-training, there is lots of room for the expression of a man's individuality. The main things are—see that the vine is in a good thrifty condition ; do not

allow an unnecessary accumulation of old wood ; and let pruning be directed so that enough healthy last year's wood shall be left to produce the right number of bearing shoots this year. For one man who prunes too closely there are ten who leave too much wood. From twenty-five to forty healthy buds are ample.

Summer pruning need not be done except in the Fuller system, where some pinching in of the shoots is practised. With most systems, however, the vigorous growers, like *Brighton* and *Rogers*, will produce such immense shoots that cultivation is impeded. When they begin to get straggly and a nuisance, the ends can be trimmed off very quickly with a sharp sickle or corn knife. Importance should be attached to the early removal of superfluous shoots, and laterals or axillary branches. This operation does not take so very long, and is a true "thinning" process. These secondary shoots often bear one or two bunches, and second-class bunches at that. The vine will have enough fruit without them. The remaining fruit will be finer, and there will be a better lot of ripened canes to select from next year. As to the time of pruning : Any time through the winter where the vines can remain uncovered will be suitable. It is better to finish all pruning before the sap starts, though it is questionable if the bleeding of the vine does much harm, and it is hardly necessary to say that it is a vast deal better to prune late than not at all.

THE FAN SYSTEM.—In this system, which is not much in vogue in recent days, the wood is renewed almost from the ground every year. An excessive amount of old wood and a trunk are thus dispensed with, and after fall pruning the vine is easily covered, where winter protection is needed. Fig 67, from Bailey's "Pruning Book," shows a vine trained in this way. With so

much growing wood close to the ground there will be more difficulty in keeping the fruit clean than where a higher system is adopted, and the tying is somewhat inconvenient.

MANURING.—The fertilising treatment accorded to the grape should be on as liberal scale as that given to other fruits. Where a big growth of wood is being made it is a sign that enough nitrogen is present in the soil. Additional barnyard manure is not necessary, and will in fact tend to promote

planted near. *Rogers 4*, *Salem*, *Brighton*, and *Rogers 9* (*Lindley*), will be unsatisfactory when planted alone. *Niagara* and *Delaware* have an abundance of pollen, and *Concord*, *Roger 15*, *Vergennes* and *Worden* will fruit satisfactorily alone.

List of varieties for home use :

Black.—*Moore's Early*, *Worden*, *Rogers 4* and *44*.

Red.—*Brighton*, *Lindley*, *Delaware*, *Salem*.

White.—*Niagara*, *Moore's Diamond*.

With respect to this list, it may be added

that *Vergennes* is a good bearer, fair quality and excellent keeper, but it ripens too late for many sections. *Moore's Early*, although a good early black grape for the amateur, is not vigorous or productive enough for the commercial grower. *Wyoming Red* is early and prolific, but poor quality.

DISEASES.—Black Rot, Brown Rot, or Downy Mildew, Powdery Mildew, Yellow Leaf, Anthracnose, called Bird's-eye Rot when attacking the fruit are the

more common. It would take too long in a brief practical treatise, such as this, to describe different diseases. Readers are referred for full information to Bulletin 92 of the Ontario Agl. College and to "Fungous Diseases of the Grape and other Plants," by Professor Lamson-Scribner. Yellow Leaf is a disease of comparatively recent origin and little is known of its nature. The bright yellow color of the foliage, the shrivelling of the berries and the dying condition of the vine readily indicate the trouble. It is advisable to uproot diseased vines and reset with healthy plants. Bordeaux mixture is the standard remedy for the rot and mildews. For the common form—the Powdery Mildew—ordin-



FIG. 68. THE VINE PRUNED

an overgrowth and induce mildew. A heavy dressing of ashes, or muriate of potash will then give excellent results, the grape being one of the heaviest consumers of potash of all fruits.

VARIETIES.—A good list for the commercial grower is the following :

Black.—*Worden*, *Roger 4*, *Roger 44*, *Concord*.

Red.—*Wyoming Red*, *Roger 9* (*Lindley*), *Delaware*, *Roger 15* (*Agawam*), *Vergennes*.

White.—*Niagara*, *Moore's Diamond*.

Many varieties of grapes have imperfect blossoms, and where this occurs, other varieties of a self-fertile character should be

ary flowers of sulphur will be as good or a better remedy than Bordeaux mixture. It can be dusted through and under the vines directly the leaves expand, and a second time when the grapes begin to form. The varieties chiefly subject to mildew are

Brighton, Rogers 44, Rogers 9, Salem and Agawam, but if the sulphuring is done early and thoroughly there will be no difficulty in growing a clean fine sample of these choice grapes.

St. Catharines.

M. BURRELL.

DISCUSSION ON VARIETIES OF FRUITS.

CROSBY.

Mr. McCollum inquired about this peach.

Mr. J. F. Hunt—I have fruited it in a small way for a number of years. It is a small peach with me, but extremely hardy. I think it is one of the best canning peaches, for flavor, but don't think much of it as a market peach.

Q.—Isn't it comparatively worthless as compared with the Crawford?

Mr. Willard—No, sir; I have fruited it for two seasons, and have been very much pleased with it in point of size and quality. Customers are pleased with it. I think soil and situation have a good deal to do with the development of good peaches.

Q. Isn't it too small for a market peach?

Mr. Willard—Not by any means; it is a good market peach.

Mr. E. Ashley Smith—I grew it this year, and the size was perfectly satisfactory.

Mr. King—I have fruited it, and it didn't prove satisfactory. The first fruiting was good size, but since that it has run small, even with close pruning.

Mr. Wood—We find that the older the tree the smaller the fruit. One thing in its favor is that it ripens in a season when we appreciate peaches.

Mr. Severn—The trouble is to get the right variety. If I had only known of the Crosby and had set my whole orchard to that variety, I should have been all right.

The Secretary—One firm, Lamming & Rudman, in the neighborhood of Rochester, sold their crop of Elbertas for over \$6,000.

A Member—I had Elberta and Crosby side by side; both grew well; but I like the Elberta full as well as the Crosby, and I think one Elberta would weigh as much as four of the Crosby.

Mr. Woodward—I agree with this gentleman. One basket of Elberta will sell for four times as much as Crosby, and you can raise four times as many.

A Member—Sixteen to one. (Laughter.)

CHAIRS' CHOICE.

Mr. B. J. Case asked after this peach.

Mr. Willard—There are some sections of the country where it is highly regarded and in demand. It does exceedingly well with me.

Mr. Pillow—It does better further south.

Mr. Willard—It originated south, but does well as far north as Sandusky, Ohio. Ripens about time of Late Crawford.

Mr. Barns—Mr. S. L. Quinby, of Marlborough, grew it, and says it is excellent. It bears well and looks well.

STEVENS.

Mr. Nelson Bogue—This peach is a seedling and originated on the grounds of the late Hon. R. S. Stevens, of Attica, N. Y. Fruit very handsome, nearly covered with a deep red, a little above medium size and ripens soon after the Early Crawford. Regular bearer, excellent shipper. Requires thinning. Tree very hardy and a strong grower.

DEACONESS.

Prof. Van Deman—Most of the fruit, I

have heard, has been either insignificant or worthless. I think the placing of this peach on the market one of the biggest frauds ever perpetrated in the state of New York. A firm of Ohio nurserymen worked this state last year selling what they labeled "Daniel Boone" and "Deaconess" peaches, warranted to be immune from yellows and to be very long-lived. I have heard of the Deaconess being delivered on which the Elberta tag had not been taken off. There are a number of gentlemen present who have been skinned to the bone. They have whistled to the tune of several hundred dollars. I think there were five thousand sold near Geneva.

Mr. Ira Pease—They worked Oswego.

Mr. H. R. McNair—A friend of mine was induced to buy some, and has them planted. Would you advise pulling them up?

Mr. Willard—I would not. There might be some Elberta among them.

TRIUMPH.

Suggested by Mr. Pillow.

Mr. Willard—I have understood from those who have grown it that it is not sufficiently large to warrant it as an orchard fruit.

WILLARD.

Mr. Willard—Some of the best fruits are oftentimes in your own locality. I have a peach myself, and I induced the Maxwell's to plant some. Don't you think the Willard a good peach, Mr. Anderson.

Mr. Anderson—We had some doubt about it for a year or two, but I would gladly say that this last year it proved very fine; would be glad to recommend it to anyone. Its season is after Early Crawford.

NIAGARA.

Mr. Woodward—We have a peach which is, I understand, an accidental seedling of the Crawford. I wouldn't set a Crawford. You could not give them to me if I could get the peach I refer to. It is about one

picking later than Crawford; averages a good deal better, better color, better leaf, and holds its size to the end of the season. You can't sell any other tree in that section if the variety I speak of can be obtained. It is called the Niagara.

Prof. Van Deman—I have heard the Niagara spoken of in the highest terms. Those who have fruited it prefer it to any other, and I think it even better than Elberta or Early Crawford.

Mr. Dewane Bogue—I think the Niagara is the Newark seedling.

Mr. Woodward—There isn't any doubt about it. I know the man on whose land it originated. I happened to get "defrauded" by getting two or three hundred trees of that variety instead of Crawford. I never found any fault. A year ago last fall I supplied Dansville Sanitorium with peaches. They wrote me half a dozen times this last summer to know if I could not send them some more. They bore a nice crop, and the fruit holds right up to the end of the picking. The quality is superb.

MARKHAM.

Mr. J. A. Anderson asked about this peach.

Mr. Willard—It originated at Hart, Mich. In correspondence with the best fruit grower I know, he said: "You remember being with me on Mr. Markham's place? He has one of the best peaches I ever saw grown. It is called the 'Markham.'" He finally secured some buds and sent them to me, and I have a few trees. From this man's statement, up in northern Michigan, where they require a hardy peach, and from his reputation as a peach grower, I am inclined to think that it might be a good peach. I will tell you next year.

CHAMPION.

Dr. Chas. A. Ring inquired if anyone knew anything of this variety.

Mr. Barns—We have two trees. It is a very desirable early peach. It is white with slight carmine cheek, freestone, and without exception the finest-flavored peach I ever ate. It is a good cropper, with season about same as Mountain Rose.

Mr. J. W. Smith, Winona, Ont.—Hynes Surprise is one of the best white peaches we have. I like the Champion; got it from Ohio. Quality is superb.

Mr. Hunt—One of the best white peaches I have, and am more than pleased with it.

KALAMAZOO.

Mr. C. A. Goetzman mentioned this peach.

Mr. Willard—I like it very much. It is one of the best they have in Michigan. A hardy variety, that gave us some superior fruit last year. Yellow, large size, a little late, good handler, and commendable in every respect.

CRAWFORD.

Mr. T. H. King—Is the Crawford doing as well as formerly? It is not with us. We are putting the Brigdon in its place. It bears a larger crop and is fully as fine.

Mr. Willard Hopkins—Is it not a fact that Early Crawford is more liable than any other variety to the disease known as "little peach"?

Mr. B. J. Case—We haven't any that excels Early Crawford, unless it is the Elberta; but Early Crawford is our stand-by yet.

Mr. Hopkins—Out of an orchard of 800 trees, after the first or second crop, about 500 were affected with the "small peach" disease. Were they grown from the pits, or is it a disease, or how did it come? I cleaned the whole orchard out.

Prof. Van Deman—This disease is just now being investigated by Dr. Smith, of Washington. As yet nothing definite is known about the germ, and there is no remedy known.

Mr. King—We had a little of it, but not

so much last season as a year ago. The affected trees were given four pounds of nitrate of soda each, and they seemed partially to recover.

BECKWITH.

Mr. Pease—It is a late peach, of rich dark color. If properly grown and thinned it is a freestone, otherwise it is a cling. In quality is very rich, and bears freely, and the trees are very hardy, but do not know if it is grown anywhere but Oswego.

GREENSBORO.

Replying to an inquiry, Mr. McKay said Mr. Maxwell had some. It is extremely early, but not absolutely freestone.

Prof. Van Deman recommend the trying of the Greensboro and Sneed, both very early peaches.

WIARD AND SNOW'S FAVORITE.

Mr. Edward A. Powell—This peach, the Wiard, is a new, very handsome and promising peach. Another good one, originating in Syracuse, is the Snow's Favorite, which ripens about the same time as Crawford's Early. Larger in size, higher colored, very fine in quality, of excellent flavor, and I consider it very desirable.

Who has experience in spraying peaches?

Mr. W. T. Mann—I made a careful experiment of spraying on dormant wood four or five years ago, and the treatment was successful. Last year similar experiments were made, and while there was not a large amount of curl there was sufficient to show favorably for the treatment, and I think you can depend on it as a practical preventive of curl.

Mr. Hopkins—What time do you do your spraying?

Mr. Mann—Just before the buds open. We also sprayed on the foliage after they were out, but that was harmful. I would not dare to use it on the leaf. I think you should spray on the dormant wood before the buds open.

Mr. Willard—Mr. Morrill took the ground that he could do the spraying all at the time suggested by Mr. Mann, but he has been doing it all winter. The result was magnificent, for he had a most wonderful crop last season. He cultivates thoroughly.

In a drouth can we work the soil too much?

Prof. Van Deman—I know of a gentleman in Illinois who undertook to determine the point. He had a piece of corn between the barn and the adjoining fields, and he had the boys, every time they drove out in the morning and at dinner time, run right through these rows, so that they made four trips and covered that piece with the cultivator almost every day, and he said he never raised such a crop of corn.

Hrof. Van Deman—We know the peach crop was a failure last year, especially about Mr. Morrell's neighborhood in Michigan, with the exception of his orchard; he had cultivated and thinned and pruned so thoroughly that his trees were in such condition they went through the terrible February blizzard all right. He took in nearly \$35,000 off from fifty acres. He sold some peaches as high as \$7 a basket; any three of them would weigh two pounds.

Has anyone had euperience in top-working Keiffer pear on the Bartlett or any other variety; if so, with what results?

Mr. Hooker—It grows readily on the Bartlett, but the Bartlett does not grow on the Keiffer. I don't know what pear will do well on the Keiffer.

Mr. Geo. T. Powell—Bosc will do all right on Keiffer.

Mr. Willard—There seems to be a lack of affinity between the Keiffer and certain other varieties. I have tried Winter Nelis, and it looks all right so far.

Is there any reasonable chance for profitable returns from the planting of nut trees, or for timber growth?

Mr. Woodward—We have a Paragon chestnut growing very nicely. If you get a dozen to grow out of a hundred you will be happy. It is about three times as large as the common sweet chestnut. After removing the film my taste is not good enough to tell one from the other. I believe there is a great future in growing black walnuts. I know of one tree that when I was a boy I dug up and took home, and now it is thirty-two inches in diameter. I believe there is profit not only in growing nuts but also nut trees.

Mr. Barns—We are making some experiments with chestnuts, but it is too early to show definite results.

Is the Champion quince of any value in this latitude?

Mr. W. H. Pillow—The Champion is all right, but it is too late here.

Winter Pears—What do members know about the Directeur Alphande and the Dorset; are they desirable to grow for market? Name their weak points, and are there any better varieties?

Mr. Barry—We have been growing Directeur Alphande for some years. It is a very handsome fruit. The tree is vigorous and a great bearer; but of course it is of too recent origin to state definitely its value. Dorset is large size, handsome, and good quality, valuable as a late pear and a good shipper. It is a question in regard to the introduction of new pears; you have so many already; but both of these are additions of considerable consequence.

What is the latest report regarding the Japan plum October Purple?

Mr. Willard—I have been disappointed in it. It bloomed well, but failed to set well. I do not regard it as a great acquisition and would not advocate planting it.

—Report W. N. Y. Hort. Soc.



TIMELY TOPICS FOR THE AMATEUR—VII.

SEPTEMBER is usually a time of uncertainty and uneasiness to those who have tender plants to care for, especially after the first week or two of the month has passed. Alternate periods of summer or chilly autumn weather, the mercury often rising or falling very rapidly in even a few hours, compels the plant lover to watch closely any indication of the approach of the first frost of autumn.

The change from summer heat to cold, even to freezing point, is often so sudden, that it is well to have the greenhouse and conservatory in readiness to receive the more tender plants early in September.

Plants in tubs or pots standing outside may be protected from early frosts by removing them to the shelter of a tree near at hand, a fence or building, or the more certain protection of a verandah. For beds of foliage or tender plants, a covering of cotton, or even a few newspapers, will often be sufficient protection to ward off slight frosts. The covering should be secured by means of stakes or wires, as close to the plant as possible without actually touching them. If the first few frosts of early autumn can be prevented from nipping foliage plants, they will often retain their rich coloring, and brighten

up the lawn and its surroundings, until the more gorgeous and resplendent tints of late autumn foliage appear to warn us to prepare for winter frost and storm.

Should any plants be unfortunately nipped by frost, keep them covered until the sun and heat of the following day has passed, as immediate exposure to sun and air is very disastrous to plants, even if only slightly frost-bitten. I have found this method of excluding light and air for a time from plants touched by frost, more successful in restoring them than syringing or plunging them in cold water. To be successful with either method, it is essential that frost-bitten plants under any circumstances, should at once have a gradually rising temperature to a few degrees above freezing point to recover in. This condition comes naturally during the increasing heat of the day, to plants exposed at night to early autumn frosts.

If you have a few choice tender plants, and feel doubtful whether there will be frost or not, it is always best to be on the safe side, and place them, if only for a single night, where they are safe. Many fine specimen plants have been ruined by leaving them outside just one night too long.

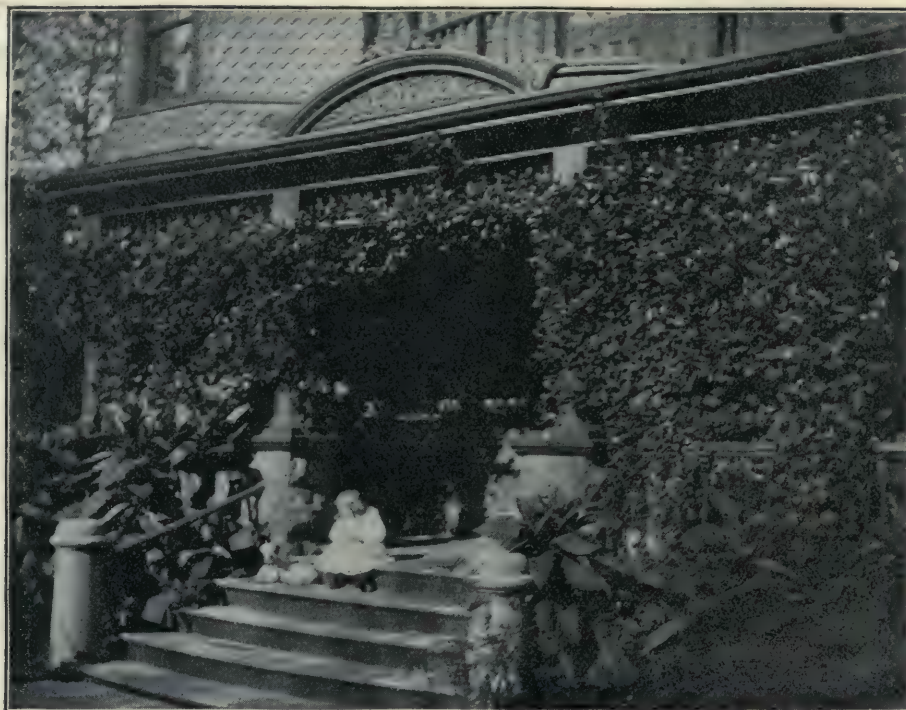


FIG. 1908. *COBÆA SCANDENS*, AT HAMILTON, NOV. 1899.

The trite old saying "Better be sure than sorry," should always be borne in mind and acted upon by horticulturists at all times, but more especially during the uncertain and changeable weather experienced during the early autumn.

THE GREENHOUSE.—See that the heating apparatus for this department is in good working order before heavy frosts commence, it might save your plants, and perhaps several nights of worry and watchfulness later on.

The cutting bed should be ready to commence propagating cuttings of geraniums, coleus and all perennial bedding plants, necessary to secure stock for next season's use. Coleus, achyranthes and ageratum cuttings more especially, should be secured before even the slightest frost has touched them, as it is very difficult to strike cuttings of these, or of any other plants, after being

exposed to cold, chilly weather. A few old plants of coleus and achyranthes may be lifted carefully from the beds or borders before being touched by frost, and potted in light loamy soil in four or five inch pots. These can be stood down on the floor of the greenhouse, where they will get a fair amount of light and sunshine during the winter. If watered carefully at the roots only, and placed where the drip from the bench does not bother them, they will often give a good supply of much needed cuttings during March and April, when perhaps cuttings from fall stock are hard to obtain. The third week in September as a rule, is early enough to take cuttings of geraniums, and the more hardy varieties of bedding plants.

Tender plants, such as stevias, abutilons, poinsettias, eupatoriums, bouvardias, etc., will require to be taken indoors before the first early frost, the poinsettias being

*Agave, Amer. Var.*FIG. 1909. *DIERVILLA (Weigelia) ROSEA.*

particularly susceptible to cold chilly weather. Freesias and Easter lilies started in pots outside, should be taken in before frost.

Agaves, palms, ficus elastica, azaleas, fuchsias, genistas, pelargoniums and other similar plants may be left outside until the weather gets cooler. Both varieties of the *Agave Americanus* will bear three or four degrees of frost for one night without injury, but it is not wise to risk them outside when the thermometer registers at freezing point, unless they are well protected.

Cinerarias, herbaceous calecolarias and cyclamens, may be left out in cold frames for perhaps a few weeks, but the sash should be placed over them on cold nights. Re-pot these plants into larger pots as required. Gloxinia bulbs out of flower should be gradually dried off. Re-pot old corms or bulbs of cyclamen.

Chrysanthemums grown in pots or planted outside, should be taken in about the middle of the month. Although most varieties of those useful plants are almost or quite hardy, a few degrees of frost will materially injure the flower buds, as well as induce an attack of mildew that will mar the beauty of both flower and foliage. Extremes of either heat, cold, dryness or moisture induces mildew, and should therefore be avoided as much as possible in growing these lovely autumn and winter flowers. If large flowers are required, disbudding will have to be attended to every day or two during the next few weeks. This is done by pinching off with the thumb nail and finger, or removing with a pair of scissors, all the small lateral buds, leaving only one or two perfect crown or terminal buds near the top of each branch or stem of the plant. A little liquid manure will help to

swell the buds during this period. Give the plants plenty of water, as the foliage of chrysanths, especially at this stage, should never be allowed to wither and droop. A light shading for these, and all lifted or repotted plants, will still be found beneficial. Syringing early in the morning will also help to keep the foliage bright and fresh looking.

Carnations planted out in the borders, should be either potted or planted on the benches early in the month; syringe daily to keep down red spider. Bench roses will require plenty of water and regular daily syringing with tepid water, early morning will probably be the best time for this operation. Tea roses in pots that have been resting, should be pruned back as required, and repotted firmly into good, rich, clay loam soil. Hybrid perpetual roses grown in pots for winter flowering can be left a month later before being repotted, as a slight frost or two is beneficial to harden the wood of these before being taken indoors.

Young bushy plants of antirrhinums, (*snap dragons*) and ageratums, etc., if lifted and potted carefully, will often give a supply of bloom during a great part of the winter. Double white allysum plants cut back, and potted three or four in four inch pots, are also useful for this purpose, and will furnish an abundant supply of cuttings as well, early in the spring.

If petunias, heliotropes and similar quick growing plants are wanted from the beds or borders, cut them back a week or two before taking them up, and give very little root room for a time.

Geraniums grown in pots (as recommended in May number of Horticulturist, page 201) for winter flowering, should be taken indoors toward the end of the month and allowed to flower.

Close ventilators early in the afternoon, and keep the floors well dampened. A little fire heat may be necessary toward the end of the month, especially for bench roses and

tender plants. Paint the hot water or steam pipes in the greenhouse with flour of sulphur well mixed in water, it will prevent and keep down mildew.

WINDOW PLANTS.—The beautiful annual climbers that are used with such pleasing effect around and about windows and verandahs in summer, will soon lose their brightness and show signs of approaching cold weather. These can, however, by a little care and attention, often be made to look quite fresh and attractive long after the flower beds have been dimmed or blackened by the first frosts of autumn. The accompanying photo, Fig. 1908, taken in Nov., 1899, showing the beautiful Mexican climber, *cobea scandens*, with its profuse, delicate foliage and tendrils, and its large purple campanula shaped flowers still fresh and vigorous, proves that even the slight protection of an open verandah will prolong the beauty of the most tender plants almost into the winter months. Many methods of temporary protection to plants of similar character, will suggest themselves to those who wish to prolong the summer beauty of their pet window plants and climbers. *Cobea scandens* is especially useful as a summer climber.

A few plants of lobelia, white allysum, etc., may be potted up from the borders to brighten up the windows until the early winter flowering bulbs commence to bloom. Later on, before the boxes are emptied, some plants of the variegated vincas (*periwinkle*) tradescantias, isolepsis, Festuca glauca, æthonna crassifolia, etc., may be potted; these will help to fill up the window and furnish a supply for next season's use. A few cuttings of German ivy or the perennial tropæolums can be struck in pots in sand, and when rooted, grown on in hanging pots or baskets for the window in winter. The old fashioned, but pretty and graceful looking trailing plant, *saxifraga sarmentosa*, known perhaps better by its numerous local names, such as "mother of thousands," "creeping

sailor," etc., makes a very pretty, effective and easily grown plant for a hanging pot or basket. A nicely grown specimen of this plant, especially when in flower in summer, has a pleasing appearance suspended in a window. *Othronna crassifolia* succeeds best in a hanging pot or basket in winter.

Roman hyacinths bulbs may be potted two or three in a four inch pot at intervals of a week or two. By potting a few bulbs at a time at intervals, a succession of these useful and fragrant flowers can be had from October until April if required. For culture, see page 456, November, 1899, Canadian Horticulturist. Cuttings of geraniums, etc., can also be taken as recommended in the above mentioned number of this journal.

Avoid using larger pots than is necessary for wintering plants in; over potting, especially in winter, has proved fatal to many a pet plant. Use plenty of drainage when potting plants for winter effect. Water thoroughly all plants when water is required. Commence operations against insect pests early. Prevention is better than cure.

FLOWER GARDEN.—Asters and other late flowering annuals will be at their best during this month. A little weak liquid manure once or twice a week will help the dahlias, if the plants are not robust and strong.

German iris and pæonies may be divided and planted out toward the end of the month or early in October, as the rush of spring work often prevents these from being planted out early enough in spring to give flowering results the same season. A light mulch, applied late in the season will help the pæonies through the winter.

Japanese lilies growing in the open border should still be making a showy display early in the month. I prefer planting these valuable bulbs inside in large 7 or 8 inch pots, and plunge pot and all outside in the open ground, in slight shade if possible, about the end of May. The pots can then be lifted into the house if the plants are in

flower when the first frosts arrive, as is often the case. *Lilium auratum*, *L. rubrum*, *L. speciosum album* and many other varieties of these gorgeous Eastern lilies can be had in flower in this way until quite late in the autumn. If the bulbs are properly cared for and given their proper resting period they will still be useful for planting out permanently in the open border and give good results. Flowering shrubs and perennials have given grand flowering results this summer, many of them continuing in flower almost the whole of the summer. Amongst perennials the *campanula persicifolia alba* and the numerous varieties of herbaceous phlox have flowered very well indeed. The accompanying photo of *Diervilla* or *weigela rosea*, Fig. 1909, shows one of these beautiful shrubs in full flower in early June. At this date (August) there are several fine sprays of bloom on this plant.

FRUIT GARDEN.—Gathering in the early autumn fruits will be the principal operation in the fruit garden during this month. Fruit picking is often very carelessly done; too much care can hardly be devoted to this operation. It is very little use to devote a lot of time and attention in pruning, cultivating, and spraying fruit trees, and then lose 50 per cent. of the fruit, as it often the case, by careless handling at picking time. Handle fruit carefully and as little as possible.

Daily pickings of fruit, especially peaches, apricots, nectarines, and even plums, is advisable. A little practice will soon enable the close observer the proper time to start fruit picking and supply the table with luscious, healthful fruit from the garden. A dish of fruit from your own fruit trees, carefully handled so as to preserve the natural bloom, will be more pleasing to the eye, as well as tempting to the appetite, than a whole basketful of fruit would be with the natural bloom all smeared and smudged, to say nothing perhaps of bruises from careless handling. It is pleasing to

note the interest that is being taken by commercial fruit growers and the great advance made in this direction of recent years, so as to place our delicious Canadian fruits before the consumers in the best possible condition.

In arranging compartments of fruit for the table, a few bright colored, perfectly shaped leaves, taken if possible from the same trees as the fruit, and placed around and about it, will show the fruit off to the best possible advantage. Autumn tinted maple leaves, or the leaves, or even the long trailing shoots of the *Ampelopsis Veitchii*, are very pretty and effective for this purpose.

VEGETABLE GARDEN.—Make a sowing or two of spinach for early winter and spring use, one sowing early in the month, and another about two weeks later. The prickly seeded Spinach is the hardiest variety, but the Round Summer is much used for autumn sowing, and often come through the winter almost as soon as the prickly seeded variety. The latter is not considered to be as tender eating or as nice flavored as the summer varieties.

Onions will be about ready to harvest now; see that they are thoroughly dried before storing. Do not leave them too long on the ground when growth is completed, as they soon commence to grow again after reaching maturity, especially during wet weather, if they are not pulled from the ground. Store them in a dry, cool place, with a temperature

only a few degrees above freezing if possible. Keep the bulbs dry and cool, is the best secret in storing onions to keep well until spring.

Celery will require watering if dry weather prevails, and earthing up a little as growth progresses. Celery can be blanched by wrapping a thick sheet of coarse paper once or twice around each head, and fastening with a piece of twine. Long clean straw, or short pieces of board placed and fastened close up on each side of the celery will answer the same purpose. The wrapping process is probably the simplest and easiest, where small quantities of this useful and healthful vegetable is used.

Beet roots must be stored, or at least pulled and protected temporarily, before severe frosts; handle carefully so as not to bruise them; leave the roots intact, and a few inches of the tops on the beet, as trimming either of these too closely detracts from the color and flavor, as well as causing the roots to rot early in the winter.

Cut all vegetable marrows that are ready for use before frost. These will keep several weeks if placed in a fairly dry cool place. Carrots, parsnips and salsify may be left in the ground till later. A few roots of the two last named may be left in the ground all winter; they are much nicer eating in the spring than those that have been wintered in cellars or root houses.

HORTUS.

Hamilton.

THE AMARYLLIS.—Those who love a gorgeously-colored flower should try the *amaryllis johnsonii*. Truly, it is a queen among lilies. A year ago I purchased a bulb and planted it in a large jardiniere filled with rich soil. It soon sent up five stately leaves several feet in length, then a large flower-stalk from which soon developed

three large, drooping, bell-shaped flowers. The petals had the appearance of rich red velvet with a white satin stripe down the center. Words fail to give an idea of its loveliness. Many persons seeing it in the window came in to know the name of this rare plant, and to admire its wondrous beauty.—*Park's Floral Magazine*.

PREPARING PLANTS FOR WINTER.

I would never advise putting the plants intended for winter use in the open ground in summer, for these reasons: The growth of the season must largely be sacrificed in the fall, when the plant is lifted and potted. This operation checks it severely, and in consequence the plant is in a weakened condition at the very time when it ought to be strongest and most vigorous. The change from out to indoor conditions is always a trying one to a plant, therefore it needs all possible strength to take it through the ordeal. If it lacks vitality when taken into the house, it naturally follows that what vitality it has must be greatly lowered by the depressing conditions it has to meet, and the result is that if it survives the strain put upon it it takes it nearly all winter to get well established, or to recuperate, and while this is being done it cannot be expected to produce flowers. By the time it gets fairly to growing spring has come, and the winter's experience has been a most discouraging one to the amateur. Therefore, the importance of having two sets of plants will be readily apparent to the thoughtful reader; one to bloom in summer, the other to be held in reserve for winter work. The same plants cannot be made to do duty during both seasons. I make it a practice to grow young, strong, vigorous plants each summer for the coming winter, and the older plants, those which have passed their prime, are allowed to bloom to suit themselves throughout the summer, and are then thrown aside. But good plants do not outlive their usefulness in one season. If they are cut back well each spring and kept as quiet as possible until September, they can be carried through several seasons and will be found more satisfactory when two and three years old than when but one year old. This is especially true of the geraniums. I know that young plants are often advised; and some

writers say old plants are worthless. These persons do not know what they are talking about when they say this. I never expect a geranium to show what it is capable of doing before its second year, and the third year it will be more satisfactory if one has room enough for large plants such as old geraniums will be when properly grown. I have in my greenhouse geraniums over six years old, and they are as healthy and vigorous as new plants and have a score of flower-trusses when the young plants have one. Visitors often ask me if they are not rare kinds. They had supposed that these plants were worthless after the first year, and are surprised to find how far superior they become with age to the ordinary small plants.

If young plants of any kind are to be grown from cuttings for winter use, they should be started early in the season. Get them to growing, if possible, in March or April. Heliotropes, Begonias, Ferns—in fact all plants except such as are grown from seed—must have this early start if one wants plants of good size. Late started plants will be more intent on producing branches than on flowering, for they will not have reached that maturity which they must attain before they get down to the serious work of life. Roses should be cut back until October. Then let them grow all they will. The new growth will always bear blossoms if strong and healthy. Geraniums should have all buds removed up to the time of bringing the plants into the house. Then let them begin to flower, but remove some of the buds that form, thus holding the plants somewhat in reserve for the season when flowers will be more appreciated. Carnations seldom begin to flower much before late fall, therefore some of the first crop of buds can be allowed to develop.

E. E. REXFORD,
in *How to Grow Flowers*.

CARE AND CULTURE OF CACTI.

MOST people who admire a well-grown Cactus in some other person's collection would like to have some themselves if they thought they would be able to give the plants the proper care to produce the best results. The writer has found also a widespread belief that a cactus must be about seven years old before it will bloom, and the thought of that long wait is enough to deter a great many from possessing any of this most interesting species of plant life. Some ladies have persevered and patiently went through the term of waiting, in the hopes of having at last the long coveted bloom, and under their treatment it has perhaps taken the required number of years to comply with the tradition. But in the writer's experience this idea has been entirely exploded. Very small specimens of some varieties, which have only been rooted and grown for one and two years have cheerfully contributed their quota of beautiful waxy flowers. It is true that some species are extremely shy bloomers, and very large plants have been kept for years without ever rewarding the owner with a blossom, and to the flower lover who only prizes the plant for its bloom this is a serious drawback. To a collector of cacti, who sees sufficient beauty in the diversity of spines, shapes, growth and other features, to prize a specimen for its own sake, even if bloom is scarce, this does not matter. A few suggestions as to care along the lines that have been most successful in the writer's case may be of interest. One peculiarity that is common to all kinds of cacti, is that the plant that is given the best care and most elaborate treatment, almost invariably rewards the owner by dying. They will not stand forcing; for although if fed on plant food they will flourish for a while, the final

result is almost sure to be disaster. So then it seems that neglect is a better plan to follow, and one need only consider the conditions in which cacti grow in their native home, to realize that this is what they are used to, and what nature has fitted them for. In clear, hot sand beds, where nothing else can live, there will be found some varieties of cacti, covered in their season with their fine flowers, and flourishing under these apparently adverse conditions. How then are we to make conditions resemble nature in our house treatment of cacti? Supposing one has a lot of cuttings of different kinds with which they wish to make a start towards a small cactus collection, a simple way to start them in a south window or conservatory is to make a shallow box about three inches deep and fill it with nothing but very coarse sand, the coarser the better, set the slips in this just far enough to be held firmly, and then after moistening the sand it would be just as well to forget the box for a week before again watering. Never keep the sand very wet or the cutting will rot off, but by giving them a little of the neglect which they naturally expect, growth will very soon appear, when the plants may be separately potted. In potting them care must be taken to have the drainage perfect. Fill in the bottom of the pot with broken crockery, stones or mortar, and on this just a layer of soil, composed of one-third garden soil and two-thirds coarse sand. Leave a hollow space in the center of the pot large enough to set the plant in, and in this put the plant, in clear sand, filling up the pot to the required depth with the sand only. This allows the roots to extend into a little heavier soil when the plant requires a little more nourishment, and the plant itself rests on the sand, which seems to suit it best. For a large window box a nice effect can be

secured by having a variety of kinds and arranging them so as to contrast the colors of the spines in any desired way, and putting a layer of sandy soil in the bottom and setting the plants in two or three inches of clear, coarse sand.

In this paper a general talk is given on culture at the outset of a cactus collection; and in some later issues special varieties will be taken up and described, with the particular treatment that they require.

Woodstock, Ont. J. H. CALLANDER.

RHYNCHOSPERMUM JASMINOIDES.

THIS pretty little trailing greenhouse shrub, that certainly does not deserve to have such a cruelly long and almost unpronounceable name attached to it, is a native of eastern lands, being found in India, China, Japan and adjacent countries. It was introduced into England from Shanghai,



FIG. 1910. *RHYNCHOSPERMUM JASMINOIDES.*

China, about half a century ago. As a greenhouse plant it is easy to grow, requiring very little care and attention; but like most of the hardwood greenhouse plants it is slow growing. Repotting into fairly rich, light loamy potting soil, with perhaps a little leaf soil or peat mixed with it, is about

all the attention it requires besides watering. I find the best time to repot this plant is early in the Spring, as soon as it shows the first signs of bursting its buds, to produce flowering growth. Keep it in the greenhouse from early in September until after it has done flowering in June, when it can be stood on the north side of a fence or building on coal ashes all the summer. This will prevent worms getting into the pot. Perfect drainage is very essential in growing this plant successfully. It requires very little water during summer, but must not be allowed to dry out completely.

The deliciously soft but powerful jasmine fragrance of its ivory white star-like flowers that it produces in such profusion in early summer, will especially endear it to all flower lovers from the old land, and awaken fond memories of the old jasmine-covered rustic porches, that add so much to the quiet, peaceful beauty of cottage homes, especially in the south and west of England; and around which perhaps many of our readers have spent many happy hours of their childhood and youth. Even a small plant of this fragrant greenhouse shrub when in flower will perfume a large dwelling house completely.

The accompanying photo of a small plant about seven years old from a cutting, will give some idea of the appearance of this eastern shrub when in flower, a plant of which should be in every collection of greenhouse plants, its flower being very useful for button-hole bouquets, etc., in spring and early summer.

HORTUS.

Hamilton.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

ERRATA, PAGE 345, "Our Watering," should read "Over Watering. Page 348, "Bench Roses" should read "Bunch Roses."

THE WONDERFULLY FINE PROSPECT for apples will be much lessened by dropping and worms. Western New York and Southern Ontario give excellent promise.

OUR FRUIT AT PARIS seems to have attracted considerable attention. Five first prizes have been awarded us. The fruit was shipped on steamer Parisian to Liverpool in cold storage.

THE TRIUMPH PEACH is promising to be very popular in Ontario. Growers in the Niagara district think its time of ripening, closely following Alexander, its yellow color, its free stone, all conspire to make it the

most popular peach of its season. Fault is found with it by others on account of its furry coat and its toughness of skin, while the tree they say is much subject to blight, especially after a season of a heavy crop.

MR. R. B. WHYTE, Director at Ottawa, seems to be one of the chief prize winners at the Horticultural show at Ottawa on the 17th of July, both for fruits and flowers, judging from the report in the Ottawa Citizen.

SEEDLING GOOSEBERRIES, from C. L. Stephens, Orillia, received 26th July, 1900, all from four year old plants. No. 1, Seedling of Industry, picked 20th July, much resembles its parent in color and form, but from branch received would appear to be much more productive. No. 2, also Seedling of Industry, green in color, quite soft

when received. No. 3, Chance Seedling, green, apparently of little value, though larger than Downing, its supposed parent. No. 6, Chance Seedling, possibly of pearl yellow, larger than Pearl of good quality.

MILLIONS OF BASKETS of Elberta peaches are being harvested in Georgia. Daily shipments over the Central R.R. of Georgia, fill about eighty cars per day, along the line of which road their are over 1,200,000 bearing peach trees.

THE SNEED PEACH ripened at Grimsby on the 24th of July. The whole crop was shipped by the 26th. It is an early variety indeed, but you can say little more in its favor. It is very soft, a cling, and has very little flavor.

AN EXTRA DOUBLE TUBEROUS BEGONIA comes from Mr. R. Cameron, of Niagara Falls. This flower is composed of many double flowers in one. It is also very shapely, like a ball, and the size of a baseball, and of a rich color and splendid substance.

THE LEADING ROSARIAN OF CANADA, Mr. Henry Dale, of Brampton, passed away July 15th. At twelve years of age Mr. Dale came from England to Brampton, becoming in 1870 a partner, and in 1881 starting business for himself, in marketing, gardening and rose-growing, a business which grew until he had 200,000 feet of glass and a national reputation. He was just building six new houses, two of them 840 feet long.

THE FARMER'S INSTITUTE of Ontario, Fruit Growers' and other Associations, have united in making a special gift to Dr. Mills in recognition of the magnificent work he has done for the country at the Ontario Agricultural College. This gift has enabled Dr. Mills to take a holiday in Europe, a rest

from his severe duties which he sadly needs in order to recuperate his worn out energies. The public presentation will be made on his return.

THE MIDSUMMER SHOW of the London Horticultural Society was held in the City Hall on the 7th and 8th August. Hours 1.30 to 10.30 each day. The exhibit consisted of flowers and decorative plants; there was no entrance fee. In another column there appears some account of this exhibition, which was a great success.

THE ENGLISH APPLE CROP for 1900 is of unusually fine quality and very abundant, according to the report given in the Gardeners' Chronicle. The pear crop is a good average, though considerably better than in 1899. It is evident, therefore, that we must ship only our finest fruit, graded to uniform size and color, if we would receive satisfactory returns. It is far better to leave small and gnarly samples on the tree to waste than to spend the time gathering them and sorting them. In the end they may be gathered for cider, after the best are disposed of. Germany will probably take a good many of our red apples, if we may judge from the following lines, written by Aug. Stier to The Fruitman's Guide London :

Hamburg, July 30.—With reference to our Hamburg market for American and Canadian apples, I beg to inform you that special red-colored fruit, Baldwins, Ben Davis, Kings, Seeks, etc., are very much liked, while green apples in larger quantities are not so much wanted—medium size apples are preferred to large ones.

We have a large crop of apples in our country, but consisting nearly fully of cooking apples, we can surely do with large quantities of good colored American fruit. Doubtless prices will not be high this season on account of probable heavy arrivals.

Hamburg, Aug. 1.—Referring to my last of the 30th ult., you will no doubt be aware of the enormous crops of apples in the United States and Canada, and the probability of heavy exports to Europe. I repeat, we have a big crop in Germany, but ours are all cooking sorts. We have no table fruit at all, and there is every prospect of a strong demand for American and Canadian apples with us.

QUESTION DRAWER.

Sowing Seed of Ginseng.

1173. SIR,—Will any member of your Association tell me why my Ginseng seed does not grow. A year ago I planted fifty seeds in a box 2 feet 6 inches long by 1 foot wide, with 8 inches of good soil. I put 8 inches of good soil in it, put the box next the fence, banked earth around it and planted the seed about one inch deep. I covered the box with a fine wire screen to keep out the mice, and kept it moist last summer by sprinkling. This year I expected young plants but not one has appeared.

Clinton.

THOS. HOLLAWAY.

We have referred our inquirer to Mr. Harlan P. Kelsey, of Boston, Mass., who is the chief dealer in Ginseng in America, who has replied as follows :

I think your subscriber probably let the Ginseng dry out at some time, and he did not plant it properly in any case. There should have been at least 18 inches of good soil beneath the seeds, and the box should have been sunk to the level of the surrounding earth, instead of having banked up around it. Again, probably the seed was not good. This can be ascertained by cutting through the seed as one would cut through a cucumber or squash seed.

The best way is to put the seeds in layers as soon as collected, with sand or soil between in beds, and put in the open air. Plant out in large boxes sunk to the level in the soil with netting roller to keep it moist.

Again, the seed may have been a little too dry, and in this case they would not come up till next spring. But he can find out if they are good by testing as above.

Orchard Cultivation.

1074. SIR,—I was much interested in the able and lucid address given at the convention of the Fruit Growers' Association by Mr. Powell, of Ghent, especially that portion which treats of the ploughing under of clovers. He makes every point very clear, except one, which is not spoken of, and that is this: It is generally the custom to plough towards the trees in the autumn and away from them in the spring, or at any rate, to work the soil away in the spring with the disc harrow. I understand that he advocates ploughing, and in

the early spring, and doing the rest of the work with the cultivator. Now, my question is, "Is it not helpful to the trees to plough towards them before the winter. Is it not almost necessary in this latitude?" And, again, would herecommend ploughing towards and from the trees alternate years, or in your opinion, if the soil were thrown towards the trees every year, would cultivating and crosscultivating level the ground sufficiently? I am much interested in the clover question and should feel obliged if you would kindly answer in the next issue of your paper.

Yours truly

Woodside, Beamsville.

A. H. WANE.

In relation to cultivation of orchards, in all well drained land, it is better to keep the ground level. Cultivation sends the roots down, hence there is no danger in ploughing the soil away from them one year and towards them the next.

There is no need of deep ploughing near the trees, just enough to break up the soil and keep it stirred. Let the deeper ploughing be done outside, which keeps roots down deep, where they obtain more moisture and are safe from frost for that reason.

I believe in setting trees deeper and depend more on the lower roots; surface roots are more liable to injury from cultivation, from drouth, and from frost, hence deeper planting and getting the root system deeper in the soil will give us better trees and better results in every way.

This, with early and frequent cultivation, and then covering the land later with clover for winter protection and for improving the soil, has given me great satisfaction. For full bearing orchards this treatment gives fine quality and regular bearing.

For young growing trees this plan would have to be modified somewhat, but where small fruit culture is carried on between the trees for a few years, such as currants and raspberries, the plan will work with equally good results.

GEO. T. POWELL.

Briar Cliff Manor, N. Y.

Spraying For Thrip.

1175. SIR,—Can you inform me the best solution for spraying indoor grapes? Last year my grape vines were almost ruined by "thrip," and am afraid they will be so again. I have been spraying them with cold water in the evenings. I have a fine lot of the fruit, and it is on the new wood. You will very much oblige me.

Yours very truly,

Cobourg,

JOHN HAYDEN.

We have had good success spraying outdoor roses for thrip with Gillet's lye. We applied it with Mitchell's hand sprayer, a sort of atomizer, which throws an exceedingly fine vapor. We used a pound to five gallons of water, but found that this was injurious to the leaves. We would only use half a pound to ten gallons next time, and then spray in very fine mist. Most people use less coarse a spray. We would expect this same material useful in the case of greenhouse grape vines affected with thrip.

We would also suggest trying the application of dry insect powder, and leaving all doors and windows closed, or the house might be fumigated with dry insect powder, a thing that has been found effective in clearing out mosquitos from houses or tents.

Apples for Prince Edward Island.

1176. SIR,—Taking fruit and tree of Ben Davis as a standard of comparison for shipping to Great Britain in winter, in early bearing, hardiness, vigor, productiveness, freedom from spot or rust, color, etc., what would you say in favor of Ontario, Gano, Stark, York Imperial, Sutton Beauty, Cranberry Pippin?

NOVICE.

Georgetown, Prince Edward Island.

As Dominion Superintendent of Horticulture at the World's Fair, Chicago, the writer had much experience with apples from all sections of the United States and Canada, and one conclusion was forced upon him, viz., the great variation in the same apple under different conditions. The Western Ben Davis was a magnificent apple, the best apple for the commercial orchard in certain States, the Baldwin of Western New York is proverbial, the Spy in On-

tario cannot be excelled by any other apple, nor the Newtown Pippin of the Alleghany mountains of Northern Pennsylvania. In certain parts of Ontario the Ontario apple is a magnificent success, far superior to the Ben Davis; in others, as for example in the Niagara District, the Cranberry Pippin is a finer selling apple than the Ben Davis, although not by any means so regularly productive. At Trenton the Stark is grown extensively and counted one of the best commercial apples. York Imperial and Gano are reported to be very successful in the Middle States, and Sutton Beauty in New York State. But so far as we know the various apples have never been fairly tried or reported upon in Prince Edward Island, and varieties which are very superior in other places to Ben Davis might prove a great failure in P. E. Island.

Apple Blight.

1177. I would like to ask if you can suggest any preventive for "apple blight," which has been very severely felt here this season and last. I put on a number of grafts last spring with the very best results, but they are nearly all killed. In common with other sufferers here I would be very glad to know the cause, and if there is any means of combatting it.

Ottawa.

A. H. TAYLOR.

No remedy is known for apple or pear blight. It is very injurious some seasons on certain varieties, and then again of quite rare occurrence. Some advise cutting off and burning all affected branches, but this is not always effective.

Pruning and Planting Evergreens.

1178. When is the right time to prune evergreens, especially Norway Spruce and Cedars? And can those trees be successfully planted after the season's growth is over, or in midsummer?

Brockville.

I. RICHARDS.

Evergreens may be pruned at any time of the year, as there is no time when they are leafless.

Transplanting of evergreens is best done when the trees are dormant, or just before or just after the summer growth. The

month of June is usually considered an excellent time, unless the transplanting is followed by very dry weather, which is more trying upon evergreens than on other trees.

The Malarial Mosquito.

1179. SIR,—There was an exceedingly interesting article recently in the Scientific American by Dr. H. O. Howard, of Washington, upon the distinctive features of the Malarial and Non-Malarial Mosquito (*Culex pungens*) and (*Anopheles quadrimaculatus*.) I don't suppose, however, "Anopheles Quad" are Canadian inhabitants.

A READER.

REPLY BY DR. FLETCHER.

The distinctive features of the Malaria Mosquito, as distinguished from the species of *Culex*, is the comparatively greater length of the palpi, the small processes which are found at the base of the proboscis. There is also a characteristic attitude when at rest. In the ordinary Mosquito *Culex* the legs are raised above the back, sweeping upwards, while in *Anopheles* they droop beneath the body. When at rest *Culex* holds its body parallel with the surface it is resting on, while *Anopheles* has the body at almost right angles, as if attached by the tip of the beak.

The Caprifig Insect.

1180. SIR,—I would like to know if any attempt has been made to cultivate the Fig in the Niagara District. I suppose, however, this can only be done under glass? Where can I find the

name of the insect imported from Southern Europe into California for the purpose of fertilizing the fig and increasing its size and production, and an account of it.

REPLY BY DR. FLETCHER, OTTAWA.

The insect imported from Europe into California for the purpose of fertilizing the fig and increasing its size is named *Blastophaga Grossorum*. or more generally the Caprifig insect.

North American Cricket.

1181. SIR,—Give some account of the North American Cricket, and if injurious to cereal crops in the same way as the Locust and Grasshopper?

REPLY BY DR. FLETCHER.

I do not know what species should be called distinctively the North American Cricket, for there are several kinds. Possibly *Gryllus Neglectus* is meant. This is a large black species which is commonly found under logs, but is also frequently seen hopping about in hot weather. I have never known it injurious to cereal crops although it consumes a considerable amount of vegetable matter. Its range of food is very varied, consisting about equally of animal and vegetable substances.

All of these questions could have been more suitably sent to an entomological or natural history publication, where they could have been answered more fully.

MR. E. L. GOODSSELL, of New York, has been abroad studying the apple market, and writes as follows in the New York Fruitman's Guide, on the apple market :

The apple crops of both Germany and England promise to be about the largest on record. But the quality is by no means commensurate with the quantity. Both countries have been sufferers from continued heat and drought, and as a result the apples, plentiful as they are, will be so small

and poor as to be unimportant factors in the market. As a result American apple shippers must bear in mind that they will win in the competition by force of sheer quality and quality alone, and accordingly they must be careful to send apples of only the best quality or size; otherwise they will get their fingers badly burned. It is believed that good apples will sell well in England and Germany, and will meet a large demand, especially in view of the country's recent favorable action in the matter of duties on American fruits.

Open Letters.

The Apple Crop of 1900.

Messrs. Simons, Shuttleworth & Co., of Liverpool, write as follows regarding the current season's apple crop:

SIR,—Following our usual custom at this time of the year, we now beg to put before shippers our estimate of this year's crop, as gathered by representatives, who have just finished their travels through the apple growing districts of America and Europe.

It appears unnecessary for us to put this information into an extended report. Taking America as a whole, the present indications are for a record crop of good quality, not excepting the phenomenal one of 1896. In saying this it must not be understood that there are no sections where apples are light and quality poor; there are spots where these conditions exist. The crop in Great Britain and on the Continent of Europe is also very large and of good quality. On both continents some varieties of fruit, where trees are heavily loaded, will be undersized, but otherwise clean and bright, particularly so where cultivation and spraying have been properly done.

The problem presenting itself for solution, therefore, is, "How can this large crop of apples be marketed to the best advantage?" The law of supply and demand ought to regulate prices every season, although as a matter of fact, from a shipper's standpoint, it rarely does. In view of this year's crop prices must necessarily rule correspondingly low.

While advising the utmost caution on the part of intending shippers, yet, owing to the superior quality of the American and Canadian product, we believe there will be times when large supplies of good, well-packed fruit will meet with an active demand, at fairly moderate prices.

The importance of a wide and rapid distribution into the hands of consumers will be apparent to everyone—growers as well as shippers—and in connection with this feature of the trade we may say that during the season of 1896 we handled over 650,000 barrels of Americans and Canadians alone, and this year we have made preparations for the handling of an almost unlimited number with the greatest possible dispatch, without unduly taxing our facilities. As soon as the fruit is sold we cable the net proceeds so that our shippers may have their money in hand within a very short time.

A Good Advertising Medium.

The circulation of the Canadian Horticulturist certainly covers the Dominion. I have had enquiries for cacti from British Columbia to Nova Scotia, and as far south as Connecticut, U. S., all as a direct result of my advt. in the Horticulturist. Substantial orders have resulted, and it is a surprise to me to find so many interested cacti collectors in Canada. Your columns surely succeed in reaching the flower lovers all over the country.

Woodstock.

J. H. CALLENDER.

Our Affiliated Societies.

LONDON—Three thousand people saw the flower show at the City Hall yesterday and last night. The crush was greatest in the evening. So many sightseers turned out to see the exhibition by gaslight that it became necessary to increase the available floor space by removing some of the foliage plants altogether.

The show has been a success beyond the dreams of the London Horticultural Society, the directors of which had evolved the idea of holding the mid-summer exhibit. Not alone was the attendance far beyond what had been anticipated, but the exhibition was declared to be the finest ever held in Ontario. There were upwards of fifteen hundred exhibits of the choicest blooms that are to be found in the gardens of the province. Sweet peas were the feature, but the display of other blooms was not far behind that delicate little flower, the pea, which has been developed until every amateur florist has his row of them.

Judge R. M. Meredith's exhibit of sweet peas made yesterday was the finest among the amateurs. His Lordship showed no less than fifty varieties of peas, and had there been space could have added to them.

The City Hall was found too small for the purposes of the exhibition. Many fine blooms were so crowded together their beauty was not done justice to. "Next year we will have the Drill Shed," President Balkwell and Director Hamilton said last night.

So marked has been the success of the exhibition that it is believed that a great impetus to amateur flower growing will result, and that succeeding shows will witness keen competitions. The Horticultural Society is to be congratulated upon the outcome of this undertaking.—Free Press.

PARIS SUMMER FLOWER SHOW—The Paris Horticultural Society is to be congratulated on the success of its first attempt at providing a flower show for the citizens of Paris on Thursday last, August 9th. A large marquee was erected on the lawn of the Congregational Church, and this was filled from end to end with flowers and plants of every description. To particularize would be a hard matter, but special mention may be made of the exhibits of Messrs. Baird, Wickson, McCormick and Miss Burshall. In the

evening the sight under the electric light was an exceedingly pretty one. The tent was crowded all evening, and not the least interesting feature was an address by Mr. William Bacon, of Orillia, who by his lecture last winter firmly established himself as a prime favorite with Paris horticulturists. Mr. Bacon, at considerable inconvenience to himself, came here to act as judge, and his decisions, backed up as they were by a thorough knowledge of his subject, gave universal satisfaction. Kay's orchestra provided pleasing music, and an ice cream stand helped to cool the temperature of the inner man on a night which was perhaps the warmest of an exceedingly hot week. We trust the society will not be weary in well doing, but will repeat its efforts at a future date. The prizes were all honorary.

Out Door Art.

Being one of the Vice-presidents of the American Art and Out Door Association, the writer regrets not having been in attendance at the recent meeting in Chicago on the 5th of June.

Dr. Howard Taylor, in behalf of Mayor Harrison, welcomed the visitors to Chicago. His remarks were seconded by Wallace Heckman, President of the Chicago Art Association, and by P. W. E. Wight, who, in place of Franklin MacVeagh, represented other local art interests. President Charles M. Loring, of Minneapolis, responded to the welcome extended to the delegates and delivered his annual address. He complimented the association upon the growth of the last year, and the great interest which is being manifested in the work. "It is a matter of congratulation," he said, "that the Municipal Art League and the American Institute of Architects have the same ideals in view that the American Park and Outdoor Art Association is striving for, and that they are working harmoniously along the same lines. Our association is represented in twenty-eight states and territories, and in Canada. The influence of the present gathering will be far-reaching, inasmuch as the movement is just beginning to show its strength, and has reached that point where it will culminate in a wave of enthusiasm for beautifying scenery and landscapes throughout the country."

In impromptu addresses from the floor, delegates E. J. Parker, of Quincy, Ill., president of the Quincy Park and Boulevard Association, and Sidney A. Foster, of Des Moines, Ia., strongly advocated the establishment of such a system.

"I am pleased," said Mr. Parker, "to see throughout the country the manner in which our universities and higher educational institutions are taking up the work of landscape gardening. What we need now is to make the grounds of every village school a park, and after it has been made beautiful to keep it open the year round and allow the children to play there. If the school grounds were made park playgrounds throughout the country, the children who are being educated in parochial schools would flock to that place, and gradually overcoming the prejudices of their parents, the Public schools would soon make friends with the Roman Catholic taxpayer."

"To accomplish this we should establish a system of prizes to be offered for the best results obtained, and insist that the school boards throughout the country, as well as in the large cities, make public parks of the school grounds. I would suggest the necessity of the co-operation of the women's clubs throughout the country as a means to accomplish this end."

In order that delegates might see Chicago parks to the best advantage, the park commissioners entertained them with drives through the park and boulevard properties. The commissioners of the South Side were hosts the afternoon of the first day. The historical World's Fair site in its new dress was viewed with much interest, and the local committee took great pleasure in pointing out the landmarks of the vanished White City. After a ramble through the Field Museum, the bugles were sounded and the guests were taken for a tally-ho ride down Midway Plaisance to Washington Park, where the landscape effects and the greenhouses with their wealth of tropical verdure and mass of bloom were inspected with delight.

At Washington Park the guests were invited into the refectory (which, by the way, is maintained by the park commissioners) and a dainty luncheon was served to the delegates. Choice fern fronds were artistically arranged before the plates as souvenirs of the occasion. After this event the drive was continued down Drexel Boulevard to Michigan avenue, past typical Chicago homes, back to the Auditorium.

At the evening session J. H. Patterson and E. L. Shuey, of Dayton, Ohio, led in a discussion of ways and means of improving the conditions and surroundings of factories and employees' homes. The discussion was illustrated by stereopticon views, and much of interest was told of what has been done in the past few years by the National Cash Register Co., of Dayton. The views showed the homes of the laboring people before and after systematic attempts at improvement had been made by artistic grouping of shrubs and flowers.

"We have found the moral effect of beautifying the homes of our people most gratifying," said Mr. Patterson. "We all know that everyone is influenced by his surroundings, and if they are made attractive and beautiful the influence cannot but be good. On the other hand it will follow that unsightly, hideous surroundings will lower the moral, spiritual and physical life of the people. If we cannot make labor a pleasure, we can make the surroundings and conditions more bearable."

"I believe that the employer of to-day will find that in this very thing he has a problem of the gravest importance to cope with. Conditions since the advent of the locomotive and quick transportation have changed immensely, and we must adapt ourselves to them. In the old days men had small shops and few employees, and they were directly interested in their moral and physical welfare. I hold that the man who employs three thousand men and women has just as much greater responsibility, and if he can make life brighter for them by showing them how

they can make their homes and small yards things of beauty, it is his duty to do so."

W. M. R. French, director of the Art Institute, was the next speaker. Said he: "It may be roundly asserted that the beauty of a small town is wholly dependent upon its trees. Watch yourself as you declare this or that village to be a beautiful place, and you will find that you mean simply that it has many and fine trees. Its beauty may be promoted by wide and orderly streets and by neat and tasteful buildings, and especially by care of trees and grass, but if the trees are really fine, it can scarcely be kept from being beautiful. With regard to the relation of trees and buildings or other artificial structures the principles are precisely those of pictorial composition. The effect of large, fine trees in the neighborhood of a building is so great as to need no enforcement. Visiting New Orleans, I was struck with the dignified, scholastic air of Newcomb College, the women's department of Tulane University, built upon an old estate where the walks are arched with great Live Oaks, as compared with the main buildings of the university upon new ground where the trees are yet to grow. I wonder that house builders do

not more often make sure of good trees. I have myself bought a tree with some land about it and built my home under it."

The entire afternoon of Wednesday was taken up with a trip through the West Park system, where the delegates were the guests of the West Park Board. Several stops were made in the parks, and places of interest pointed out to the visitors.

The business of the convention was all transacted at the morning session on Thursday. The officers whose terms expired at this time were re-elected for the coming year, except President C. M. Loring, who declined a renomination on account of ill health. Mr. L. E. Holden, of Cleveland, Ohio, one of the first and strongest friends of the movement, was unanimously elected president. Messrs. J. C. Olmstead, of Brookline, Mass, and Mr. E. J. Parker, of Quincy, Ill., were elected vice-presidents; Mr. Warren H. Manning, Boston, secretary, and Mr. O. C. Simonds, of Chicago, treasurer. The next meeting will be held in Milwaukee in June, 1901. A number of steps were taken looking to a wider field of work and to extending the interest in the movement in different parts of the country.

OUR BOOK TABLE.

SPRAYING CALENDAR, issued by Messrs. Stone & Wellington, Toronto. Free on application.

CANADA'S GREAT EASTERN EXHIBITION, 16th Annual Fair, September 3rd to 8th, Sherbrooke, Que. M. M. Tomlinson, Secretary.

EXPERIMENTAL FARM REPORTS FOR 1899. Dr. Wm. Saunders, Director, Ottawa. An excellent report of over 400 pages, full of valuable information for the farmer and the fruit grower.

GINSENG CULTURE. Information about this great Chinese root, with cultural directions by Harlan P. Kelsey, Tremont Building, Boston, Mass. This is a well written pamphlet, which we commend to all persons interested in the culture of this plant.

CYCLOPEDIA OF AMERICAN HORTICULTURE, comprising suggestions for cultivation of horticultural plants, descriptions of the species of fruits, vegetables, flowers and ornamental plants sold in the United States and Canada, together with geographical and biographical sketches by L. H. Bailey, Professor of Horticulture in Cornell University, illustrated with over 2,000 original

engravings, in four volumes, at \$5.00 each. New York: The McMillan Pub. Co., 1900. Vol. 1.

The second volume of this excellent work has just come to hand, and certainly it continues to make the same impression for excellence of matter and execution which the first volume made upon us. Every department of horticulture, including floriculture, pomology, commercial nursery propagation, the botany of horticulture, is not only fully written up but also beautifully illustrated.

One of the important features of the work is its application to our country. That grand work by Nicolson is for Englishmen, and quite misleads one with regards to dates of planting, adaptation, hardiness, etc., but on all these points Prof. Bailey has taken care to enter into the minutest necessary detail. We do not hesitate to commend this work to all our readers, whether fruit growers, gardeners, gentlemen of leisure, or of whatever profession, for it contains such information as it would take scores of books to give, herein gathered together in one fine production, and which cannot fail to both interest and instruct every reader.

PLANT DISTRIBUTION FOR 1901

FRUIT.

A. CUMBERLAND RASPBERRY, TWO PLANTS.

Described by the Introducers as follows:

This new Raspberry originated nine years ago with Mr. David Miller, a life-long horticulturist and fruit grower, who thoroughly tested it under all conditions. It is offered with the assurance that it is *the most profitable and desirable market variety yet known*, because of its *immense size, firmness and great productiveness*, well entitling it to the designation of "*The Business Black-Cap*." It has undergone a temperature of 16 degrees below zero, unprotected, without injury—a temperature which badly crippled similarly situated plants of Gregg, Shaffer, Cuthbert, etc. It is of wonderful productiveness, producing regularly and uniformly very large crops. *In size, the fruit is simply enormous*, far surpassing any other variety. The berries run seven-eighths and fifteen-sixteenths of an inch in diameter. In quality it is similar and fully equal to Gregg. Although extremely large, it is unusually firm and is well adapted for long shipments. In ripening it follows Palmer and precedes Gregg a short time, making it a midseason variety. It is an unusually strong grower, throwing up stout, stocky canes, well adapted for supporting their loads of fruit.

It is thought to be a seedling from Gregg, with a dash of blackberry blood in it. The Cumberland is a true raspberry, but it may be of interest to state that several seedlings from the Cumberland have had true blackberry foliage.

J. W. Kerr, Denton, Md., a well known horticulturist says:

"There is no horticultural effervescence in me; otherwise, I would bubble over or burst when I look at the fruit on those three plants of Cumberland Raspberry. I have grown Mammoth Cluster and Gregg that were very fine, **but this Cumberland is really a marvel.** Fifteen-sixteenths of an inch diameter was the measure of as large a berry as I saw of it, but they were all large. I let all the plants carry all the fruit they set, and they were very full. If this season's behavior is a safe criterion to judge by, I pronounce it vastly superior to any Black-cap I know anything of. I never knew any of its type to be so long in form as it is."

FLOWER.

B. SPIRÆA JAPONICA BUMALDA, ANTHONY WATERER

The Rural New Yorker says of it:

The most satisfactory Spiræa in existence; a constant bloomer. The plant is of low growth; the umbels of a bright pink color, brighter than those of its close relative, Bumalda. A profuse bloomer. Introduced there a few years ago.

Mr. Wellington says of it:

"Am also sending bloom of Spiræa Waterer. Quite a sight in nursery row and they bloom till frost comes."

A WORD TO OUR SUBSCRIBERS.—We submit the list much earlier than usual because we want to get all our renewal orders for 1901 in before the end of 1900. We want to make the first year (1901) of the new century a **record breaker** for the membership of our Association, so we are offering each subscriber a choice between these two beautiful plants, both of which are **new** and **valuable**.

Any person sending in two names and two dollars, may have an extra plant in place of commission, and thus have for himself both the Spiræa and the Raspberry.

New Subscribers sending in one dollar for the year 1901, may have the balance of the year 1900 free, in addition to choice of plants.

No plants can be promised to those who do not make selection when paying the subscription.

Remember the old proverb, "First come, first served," so the sooner you send in your subscription and select your plant, the more sure you are that the stock will not be exhausted.

Horticultural Societies or Agents are allowed to select an extra plant in place of the commission allowed for each subscriber, in which case, of course the whole \$1.00 must be remitted us for each person on the list. In this way a society could, if desired, secure two different plants of trees from our list for each of its members, the value of which at retail would nearly equal the whole membership fee.



FIG. 1911. LARGE FLOWERED SWEET SYRINGA.

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THE SWEET SYRINGA.

FEW of the newly introduced flowering shrubs surpass the old and well known Sweet Syringa, or Mock Orange. Scientifically it is known as *Philadelphus Coronarius*, a genus of the botanical order *Saxifrageae*, which contains about a dozen ornamental shrubs.

The Syringa is easily cultivated and thrives well in almost every condition of soil and climate. Nothing is prettier than it when in bloom in the month of May, and its rich green foliage makes it an attractive shrub even when bare of blossom.

It is easily propagated by suckers, so that any one may easily increase the number of his plants and use them for a screen, or a clump on the lawn.

Our frontispiece shows a spray of a very beautiful species, viz., *Philadelphus Grandiflorus*, or large flowered Sweet Syringa, natural size. This is of American origin, having been produced in the Southern States in 1811, and now widely distributed both on this Continent and in Europe. The bush is a more vigorous grower than *P. Coronarius*, often reaching a height of

10 or 12 feet, under favorable conditions, and its season of blooming is two or three weeks later than the common variety.



FIG. 1912. SWEET SYRINGA.

The pruning of shrubs is often perplexing to the amateur, owing to the different flowering habits, some flowering on wood of the current year's growth, and some on that of the previous year, of which latter the Sweet Syringa is an example. Fig. 1912 shows one of them, the top part of which was pruned in May, just before its flowering

season, and, as a result, the whole top part of young growth is without flowers, while the old wood is laden down with beauty. The photograph was taken on June 30th. Had the pruning been deferred until about this date the whole bush would have been a thing of beauty, and the July growth would have been prepared for blooming in 1901.



FIG. 1913. A VIEW IN THE CHERRY EXPERIMENTAL PLOT.

TREES AND SHRUBS AT GIBBLAND FARM,

ABBOTTSFORD, QUEBEC, CANADA.

I WAS much interested in the historical notes presented to the readers of the *Horticulturist* a short time since, by Mr. J. M. Fisk, of Abbotsford. Such records as these are interesting to the reader who scans periodicals without any special point of interest in mind, but particularly to the fruit growers of the day who desire to know who the pioneers were who made the



FIG. 1914. OLD GRAFTED APPLE TREE AT GIBBLAND.

beginnings of an industry which has flourished to such a marked degree in the eastern townships of Canada.

Charles Gibb came to Abbotsford in the spring of 1873. Almost immediately he began the planting of fruit trees. His interest in ornamental shrubs and trees developed or was awakened somewhat later. As I recall it, his first plantings were made with native trees and a row of hardy maples which now

surround the lawn, were among the first trees set out with a view of beautifying the grounds. As time went on and his views on horticultural topics broadened, his interest in beautiful trees and shrubs deepened and his desire to place upon his own grounds specimens of the hardier types became keener each year. His visit to Europe in 1883 did much to increase his interest and his love for beautifying types of trees and shrubs. Between 1875 and '85 many forms of native and foreign shrubs and trees were planted at Abbotsford. The common types, such as cut leaved birches and maples, Norway spruce, Austrian and Scotch pine were planted first. Many of the rarer ornamentals were planted between 1880 and '85. Of course the mistake of planting too closely was not avoided. This is the common error of all lovers of trees and shrubs. When rare and beautiful trees are set out, we should give each tree sufficient space to develop normally. This, of course, is not good landscape gardening, according to prevailing fashion, for in following the most recent types of landscape gardening practically no attention is paid to the tree as an individual. Each variety is used for the purpose of giving mass effects. In following this kind of planting one may use cheap shrubs and trees and often obtain as pleasing effects as with the more expensive. In the planting at Abbotsford, it goes without saying that many ornamentals were set out which failed to endure the somewhat trying climate of the west slope of Yamaska mountain. I recall a beautiful specimen of imperial cut leaved weeping alder, planted in 1882, which survived two or three winters and was a thing of great beauty, but finally succumbed. So did a number of cut leaved Japanese maples, cut leaved sumach in addition to rhododen-



FIG. 1915.

CUP LEAVED BIRCH.

COL. BLUE SPRUCE.

WILD OLIVE.

WITH NORWAY SPRUCE HEDGE IN FRONT. GIBBLAND.

drons, althea, English walnut, and other half-hardy trees and shrubs.

Among the striking trees which remain upon the lawn at the present time are good specimens of Douglas fir, golden retinospora, blue spruce and red cedar; and among deciduous trees, Buffalo berry, wild olive, Schwerdler's maple, grape leaved linden, purple leaved birch, variegated ash and Kentucky coffee tree, are all in good healthy condition and succeeding admirably.

Douglas fir planted eighteen or twenty ago is now between 25 and 30 feet in height, is vigorous, healthy and apparently entirely hardy. This tree is intermediate in appearance and external characteristics between our native balsam and spruce. The leaves are much longer than spruce and are soft, being entirely without the prickly character-

istics of white or blue spruce. Golden Retinospora is a variation of the common type *Retinospora plumosa*. It must be confessed that the tree is more beautiful in youth than in maturity. When young—5 to 10 years—it is compact, owing to the peculiar character of its leaves and twigs, the general expression is feathery and beautiful, but as it grows older the branches become less densely clothed with the plume like foliage and the tree takes on a somewhat unclad expression which detracts much from its beauty. For best effects this tree should be planted in clumps and in masses. In spring this foliage is distinctly and markedly golden tipped. The deep yellow tints fade off somewhat during the summer, but it is a striking and attractive form at most seasons of the year. Blue spruce (*Picea pungens*) is so well known



FIG. 1916. A VISTA IN GIBBLAND FARM.

that nothing need be said regarding its many good points. A tree of this type should always be planted where it can develop symmetrically. The natural habit of the branches is such that if crowded on one side by encroaching trees or buildings much of its natural beauty will be taken away. Red cedar though a common tree in western and central Ontario and the middle states, is very slightly known in Quebec. A clump of the western type was planted in the lawn at Gibbland in 1881. They have grown slowly but have fruited profusely for the last eight or ten years. This tree does well either singly or in masses.

Buffalo berry was secured by Mr. Gibb from the western states about twenty years ago. A group of these was planted in the lawn also; fortunately, both sexes were secured and the trees have fruited abundantly for several years. In the autumn, when they are loaded with their masses of light red berries, they are even more beautiful than during the early summer months when carrying their covering of silvery leaves.

Another tree which is becoming popular in the west and which was introduced into Quebec by Mr. Gibb about the same time, is the oleaster or wild olive, *Eleagnus angustifolia*. This tree is being freely planted in the upper Mississippi Valley states. The clear silvery expression of the foliage is strik-

ing. The tree is a rapid grower, stands cold and heat well and is useful as a wind break and as an ornamental. From my observation of this tree, I am of the opinion that it is more at home in the hot and dry western country than in the humid region of the east. At all events it is a desirable shrub to introduce in the lawn for the purpose of adding variety to landscape coloring.

For the same purpose the purple leaved birch and Schwerdler maple, a red leaved type of the Norway spruce, are very useful. They have both succeeded admirably at Gibbland Farm.

PINUS EXCELSA (*Bhotan pine*).—This tree is practically the European white pine. A casual examination might easily lead one to believe that he was looking upon a slight variation of the ordinary type of our American



FIG. 1917.

DOUGLAS PINE (Pseudotsuga Douglasii.) BHOTAN PINE (Pinus excelsa.)
20 to 25 ft. high. GIBBLAND.

Pinus strobus. We learn that Bhotan pine is found in the Himalayas at elevations between five and ten thousand feet. This is its home. Here it flourishes, growing frequently to the height of 150 feet. Brown, the noted Scotch forester, states that it was introduced into Britain in 1823. It appears never to have been very widely cultivated, but specimens are found scattered throughout the British Isles and in America; one frequently meets with it in the New England states. Like white pine, the leaves are found in whorls of five. They are glabrous on their inner faces and a blueish green without. The cones are produced singly, are cylindrical and slightly conical in form.

The tree has a very general resemblance to the white pine. The distinguishing points are the leaves and the cones. The former

are longer and the latter more slender. In outline, the Bhotan pine is tall and distinctly conical. The specimen at Gibbland farm was planted in 1878. It is now something over twenty feet in height. Not quite as tall as a Douglas spruce along side of it which was planted at the same time, (see illustration.) The wood of Bhotan pine does not appear to be as much prized as White pine, being somewhat softer in texture with less strength. The chief uses of this tree then are those which serve the aesthetic, and tend to please the eye. In outline it is handsome and symmetrical. In shading and coloring, like all silvery leaved trees in the early part of the summer, it is particularly soft and beautiful.

JOHN CRAIG.

Cornell University,
Ithaca, N. Y.

OUR FRUIT MARKETS.

LOOKING at the value of our Winter Apples from the standpoint of the fruit grower, we are inclined to take the views of apple buyers *cum grano salis*. First, we are told of the enormous crops in England and on the Continent then that the crop of North America is equal to that of 1896, when prices ruled so low in the month of December that many shippers only received about enough to pay freights, and had better have left their apples to waste in the orchard.

It appears that these buyers have met in Toronto and agreed to pay only 50c. a barrel for winter apples! Are we growers to have such a low price put on our goods as this and submit without a word? The fact is that these buyers are organised and will act in concert with regard to the purchasing price, while we growers, having never agreed about the selling price, are simply at their mercy, and must take what they choose to offer.

Were it not for the organization of the buyers, the law of competition would get us fair play, but as it is what can we expect but to suffer from a disadvantage? But even this condition of affairs may not be an unmixed evil, for it will lead to a new system of fruit shipping, sooner or later. At Grimsby, for example, eight of us, who have large orchards, have united for the purpose of packing our fruit uniformly and making up carload lots for export on our own account. We grade our finest colored apples with Wartman's grader, making apples $2\frac{1}{2}$ inches in diameter No 1, $2\frac{3}{4}$ A No. 1 and 3, Extra A No. 1; or, instead of Grade we sometimes use the words Diameter $2\frac{1}{2}$ inches, etc. We wrap them in tissue paper and pack them in boxes, with excelsior or sphagnum packing. Then we use a uniform set of marks, so that the goods we ship are at once recognized, and will command their true value in any market

There is very little difficulty in making up car lots at any time, for each man need only furnish one-eighth of the lot, and if there is anything to be made, we get it.

And now regarding the outlook for our apples this fall. We have numerous circulars from apple receivers. For example, Jas. Lindsay & Son write as follows:

As the apple season is now about to begin, we beg to advise you that the prospects with us are as follows: Green fruit, for cooking purposes, is very abundant, especially the English crop, also the continental crops are advised to be very heavy, and as the shipments from this quarter mostly consist of cooking apples of a green nature, then we advise you that in the early part of the season green fruit will not do to ship from your district, as it would have to contend with a market that was heavily supplied of the kinds mentioned above, shipped from England and the Continent. The rates from these places being much lower than the rates from yours to ours it would only cause a loss to you to send fruit of this grade. The only kinds that will pay to ship in the early season are the colored varieties, such as Kings, Spitz, Spys, Baldwins, Vanderveers, Wagners, Blush, good clear sound Snow's, and any other good colored variety of a good carrying quality. It is also our opinion that it will not do to ship common qualities this year. The expenses are too heavy, and before that such could be cleared there will be nothing left for the goods, should they even manage to clear expense, which would be doubtful.

No doubt this gives us a good idea of the condition of things in Great Britain; but as regards the crop of this Continent we think it is an over-estimate to say that it will exceed that of 1896. Possibly the gross results may equal 1896, but the quantity of No. 1 stock will be much less than a general survey of the orchards would indicate.

In the first place, from one-third to one-half of our fruit will be unfit for export from the ravages of codling moth and apple worm. These insects grow more troublesome every year, and no fruit infested with them should be sent forward.

In the second place, a large percentage of the clean, perfect fruit will be too small to export. No apple of such kinds as King, Greening, Baldwin, etc., which is below 2½ inches in diameter should ever be put up for this purpose; and if this rule be applied,

as indeed it should be, there will be plenty of room in the old world for all our fruit. It would be a good law which would compel every packer or shipper to stamp on the outside of each package the minimum diameter of the fruit inside, for this would help buyers to buy with confidence.

Another outcome of the low prices and consequent dissatisfaction on the part of the grower is the Packing Company, a business conducted after the model of the Packing Companies of California. Van Duzee & Griffith, Grimsby, and E. D. Smith, Winona, are examples of this method. Fruit is purchased by grades, to facilitate which orange graders have been imported from Ohio. The price offered varies according to the grade, which is soon settled when the fruit has passed through the machine. Suppose, for example, ten baskets of peaches are brought in by John Smith, who is to receive 60c. for A1, 40c. for No. 1, and 20c. for No. 2; the grader turns out—

3 A1 at 60c. . \$1.80

4 No. 1 at 40c. 1.60

3 No. 2 at 20c. 60

Or a total of . \$4.00 for the ten baskets.

John Smith is perfectly satisfied with the result, but goes home inwardly resolved that in future he will take care to grow no more No. 2 peaches, and if possible to grow all A1; a lesson he would never learn if he had sold the whole in bulk at perhaps 30c. a basket.

This means that John Smith in future will cut out or top graft over all poor varieties of fruit in his orchard, give better cultivation and manure, prune and thin, until he reaches an ideal product, which will command the highest price in any market in the world.

Already our efforts in the direction of improved packing are being appreciated abroad. An English trade paper says:

We are particularly pleased to testify to the quality of the Canadian fruits. They are far

superior to the American, the flesh of the fruits is finer, more juicy and toothsome, whereas a good many of the California Newton apples are hard and quite different to those sent from Canada. This is proved indirectly by the excellent prices which rule for the best Canadian stuff. We throw out a hint to the retail fruiterers and

dealers in the cities and towns of the United Kingdom. Why not ticket these fruits as "Canadian"? If that were done the public would do its duty without hesitation, and a taste of "the real thing" would soon create an immense demand for the finest of fruits from the fair Dominion of Canada.

CANADA AT PARIS.



FIG. 1918. HORTICULTURAL DEPARTMENT OF THE CANADIAN EXHIBIT.
DISPLAY OF APPLES AND OTHER FRUITS.

THE REPORTS that come to us concerning the fruit exhibit from Canada at the Paris Exposition are most satisfactory, and our readers will be glad to have a glimpse of the display of apples of the crop of 1899, which were collected by Mr. A. McAllan, of Goderich for Ontario. All provinces which grow apples for export were represented but we have not the names of those who collected for the other provinces.

The writer has also forwarded 32 cases of apples peaches and pears of the current year's crop, which were taken in cold storage

to Manchester, and are to be forwarded thence to Paris.

The varieties sent included; — *Peaches*, Elberta, Lord Palmerston, Late Crawford; *Pears*, Flemish Beauty, Triomphe de Vienne, Duchess, Louise, Howell, Clairgeau, Anjou, Souvenir de Congres and Diel; *Apples*, King, Greening, Cranberry, Cabashea, Maiden's Blush, St. Lawrence, Swazie, Golden Russet, Black Detroit, Ontario, Wealthy, Spy, Pewaukee, Stump, Colvert, Bottle Greening, Mann, Alexander, McIntosh, Fameuse, Ribston,

PICKING AND PACKING APPLES.

USE ladders of proper length to reach well up to the top of the tree. Use half-bushel baskets with hooks on handles. Be very careful in handling ladders. Commence picking about ten days before all the apples on the trees are ripe, and (in red varieties, especially Rome Beauties) only pick those that are of a good red color and would be likely to drop before all would do to pick—say about one-fourth of the apples. This saves the ripest and lightens up the tree. In about ten days, or at the usual time of commencing, pick the orchard over again and take at least half this time of the best colored apples.

Then, in about ten days, commence the third and last picking, and by this time and mode of picking the apples will have grown and colored up so they will be about all good, salable apples and the increase in color and in size of the apples will pay for all the extra work and give you a handsome profit besides.

I take my barrels to the orchard and fill them from the baskets as they are brought from the ladders, putting the baskets down in the barrels and turning them over with great care. Haul them to the barn immediately and not let the sun shine on them or let them get wet. Store the barrels on a

dirt floor, the best because coolest and dampest. When you want to pack them have a table about ten feet long by three wide, with side boards about eight inches high. Line the table with carpet. It need not be Brussels. Pour out three barrels on the table at a time. With two men to sort, use six baskets. Make at least three grades of apples, putting the very largest in one basket and the medium size and the good colored ones that are a little below that size in another basket. Put the small and the culls in another basket. In filling the barrels with the different grades, pick out nice, smooth, well colored apples and "set" or "face" the heads of the barrels with them, leaving the very largest apples of each grade to fill in the middle of the barrels, so that if the buyer turns out a barrel he finds the best apples in the center of the barrel. Fill the barrels up and level the apples to the top of the staves. Press the head in so that not an apple will move in the barrel. Nail hoops well and turn the barrel over and put your name on the other head with the variety of apples and number of grade. If you pack and grade thus you can always find market as soon as your name is known.—*Fruit Trade Journal*.

RED APPLES, WELL PACKED, WANTED IN GERMANY.

Edward Jacobs & Sons, Hamburg, write under date of Aug. 10: "The home crop is more abundant than last year, but the demand for American and Canadian apples increases year by year, and we have every reason to believe that good average prices will be made. The red varieties are in

most request. Very few Greenings and Russets are inquired after, so we should not advise too many of the latter sorts.

"We must impress upon all shippers to see that the fruit is carefully graded and that the apples are put up in a manner that they arrive in good order and not slack."

A HOME-MADE CIDER PRESS.

ON the farm where there is no cider mill, a large number of good apples are wasted every year. These might be converted into cider. The accompanying illustration is

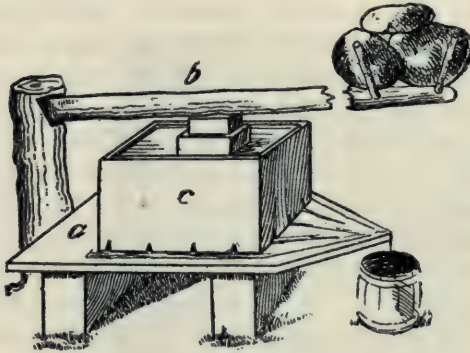


FIG. 1919.

THE CIDER PRESS IN POSITION.

of an easily made press for the purpose of utilizing those apples. Simply procure a plank about 4 foot in length, and as broad as available, and a stout pole, *b*, 15 to 20 ft. long. Make a frame or vat, to hold the apples to be pressed. It can be constructed of 1 in boards, about 1 ft. square. Set this vat on the plank, *a*, and have a channel cut round it in the form of the letter Y. Place the plank and vat at the base of a tree or

stump, using a few blocks to raise it from the ground one or two feet. Now cut a deep notch in the tree or stump about 1½ or 2 ft. above the plank and insert the heavy end of the pole. At the other end of the pole set four pins as shown.

The apples to be squeezed with the press are thrown into the vat a few at a time, and a heavy wooden stamper is used to crush them. When the vat is full of the broken-up apples, a wooden cover, fitting inside of the vat, is laid on top. A few blocks are placed on top of this cover so as to allow the pole to press down on the movable covering. The pole is weighted down with heavy stones or boulders placed between the four pins at the end remote from the press. Cut several small V-shaped openings round the bottom of the vat, or make a system of channels, connecting with the large channel to collect the juice and permit it to follow the course along the plank until it reaches the vessel used to receive it.

The illustration shows the press when completed and also explains the manner of using it. I can confidently assure any farmer readers that this press, which will cost practically nothing, will give entire satisfaction.—*American Agricultural*.

CIDER MAKING HINTS.

THE present season with its promising apple crop will undoubtedly see a great deal of cider and vinegar made. The prevailing idea that cider can be made from any kind of apples, may result in a great deal of poor cider and consequently poor vinegar. Especially is this true in sections where premature dropping is more

common than usual. An attempt will undoubtedly be made to utilize this partially matured fruit by making it into cider. This may be the best means of disposing of it, but good cider cannot be expected from such fruit. It will be thin and watery and vinegar made from it will contain a small percentage of acetic acid. As most states

require 4 to 4½ per cent of acetic acid, vinegar made from poor cider must be tested before being sold.

As the amount of acetic acid in vinegar will depend primarily on the percentage of sugar which the cider contains, it can easily be seen that to have the best cider and cider vinegar, well-developed apples containing enough sugar to make at least 6 per cent alcohol must be used. They should not be of the very sour variety nor of the very sweet. Russets, Smith's Cider, Snow and those of that class are the best. However, by judiciously mixing sweet and sour, a high-class product results.

Another element of success is a clean cider mill. Of course, up-to-date cider makers have improved machinery and keep their buildings and presses perfectly clean, but in many of the apple-growing sections, there are small mills and presses. These are seldom in best condition. All apple pomace should be removed as quickly as possible and not allowed to decay near the mill. The crushing rollers and the presses should be cleaned frequently and fumigated, if possible, by the use of burning sulphur. If the pomace cannot be utilized for stock feed, it

should be hauled away and spread upon the land as fertilizer where it will be of the most benefit. All tanks and utensils used about the mill, where fumigation is impossible, should be scrubbed with lye from wood ashes or a strong solution of crude potash.

If the utensils are so old that taint or smell cannot be removed by this process, it pays to abandon them and get new ones. Where satisfactory conditions concerning surroundings cannot be obtained, it is best to haul the apples to the cider mill, have them worked up at once and take the cider home the same day. This prevents the absorption of objectionable odors and reduces to a minimum the evil effects of a poorly kept cider mill.

After the juice has been extracted from the apples, the cider should be kept at a temperature of about 65 degrees if possible, where wanted for use as cider. Even then fermentation will soon begin. After a few days the cider can be racked off into barrels which have been well cleaned. Fermentation, or at least the tendency to turn to vinegar will be checked.—*American Agriculturalist*.

MARKETING THE PLUM CROP.

In most cases experience has proven that plums, if shipped to market in 10-lb. grape baskets, provided with handles, and put up in neat, presentable shape, will bring the producer a greater percentage of profit than if shipped in half-



TABLE FOR ASSORTING PLUMS.

bushel or bushel crates or packages. A careful picker can fill the basket direct from the tree, but the usual plan is to pick into

large receptacles, then, carefully sorting the plums, place in packages ready for market. This frequent handling removes a great deal of bloom from the fruit, which removal should be avoided as much as possible.

By the use of a single table as illustrated, plums and other similar fruits are easily assorted. The top of the table should not be over 3 x 2½ ft. The sides and back, *r, r, r*, may be 8 in. wide at the back, tapering to 3 in. in front; the front guards, *c c*, should be less than 3 in. high, leaving a 6 in. space between the inner ends; the

slanting board, *g*, is 6 in. wide. To operate it, place the fruit carefully upon the table, the assorter occupying a chair in front of the table, with a basket on his lap. Both hands can then be used in removing the leaves, limbs, damaged or imperfect fruit, throwing the refuse into baskets, *n, n*, on the floor. The perfect fruit, or that intended for shipment, is rolled in front,

and passes over the incline, *g*, into the basket. This table need cost but little, and may be made in as crude or elaborate a form as wished. In working, the elbows can rest upon the guards, *c c*, which will make the operation much easier. An ordinary table can be fitted with these simple appliances and quickly removed after the shipping season is passed.—*Farm and Home*.

YORK IMPERIAL APPLE.

The York Imperial is being so extensively grown in New Jersey that it was judged expedient by the Executive Committee to insert a plate showing three distinct forms often occurring on the same tree, kindly loaned to us by the Pennsylvania Agricultural Experiment Station and to give a description of the apple as it appears in bulletin No. 43 of same station as follows: "York Imperial:—Sometimes listed in catalogues as Johnson's Fine Winter, and in its native county sometimes referred to as the Shep apple, Shep being a word of the Pennsylvania German having reference to the oblique shape of the fruit. The tree is a vigorous grower with slender, drooping

branches after the manner of Ben Davis. It comes into bearing at four years after planting, bears regularly and heavily. The foliage is remarkably free from scab. The fruit is of medium size, oblong, angular, oblique, smooth, skin yellow and almost wholly covered with two shades of red, the darker one disposed in indistinct stripes; basin deep; cavity deep and narrow, stem short; flesh yellow, juicy, firm, sub-acid, good; season late winter, a good shipper, bringing high prices." Mr. DeCou: I think it is a mistake to speak of the Yorktown Imperial as a second variety. It sells second alone to Newtown Pippin in the English market.—*New Jersey Horticult. Report*.

AN ARSENIC PREPARATION.—The spraying mixture formula by Professor Kedsie of the Michigan Agricultural College, is as follows: Boil two pounds of white arsenic and four pounds of salsoda for fifteen minutes in two gallons of water. Put into a jug and label "poison," and lock it up. When you wish to spray, slake two pounds of lime and stir into forty gallons of water, adding a pint of the mixture from the jug. The mixture in the jug will cost 45 cents, and this is enough for 800 gallons or twenty barrels of spray. These twenty barrels will require forty pounds of lime, which will cost twenty cents more, making the total cost 65 cents

for twenty barrels, or $3\frac{1}{4}$ cents per barrel. It is claimed that Professor Kedsie's mixture is more reliable in use than Paris green as an insecticide, that it does not burn the trees and is less expensive. Professor L. R. Taft, of the Michigan Agricultural College, thinks the salsoda in Kedsie's spraying mixture is unnecessary, and as it adds greatly to the cost of the material he does without it. He says: "I prepare the arsenic mixture by boiling one pound of arsenic with two pounds of lime in two gallons of water, for 30 or 40 minutes; and for fruit trees I add this to 400 gallons of water or Bordeaux mixture."—*California Fruit Grower*.

PARASITIC FLOWERING PLANTS.



NUMBER of our indigenous flowering plants have not hitherto been successfully cultivated. Some of them when in bloom would be very attractive objects in the flower garden, for they are both beautiful and showy. The difficulty has arisen from inattention to the fact that they are root-parasitic. It is not supposed that they are wholly dependent upon their host plant for food ; in fact it has been demonstrated that some of them are not, but nevertheless they are not vigorous and healthy without the nutriment derived from the host. They grow from seed just as any other seed bearing plant ; are nourished for a time by their cotyledons, their root extending into the earth and branching out in search of food supply. Upon the branching roots suckers are formed, which attach themselves to the roots of the appropriate host, and draw from them the required nutriment.

At present it is not known what plants are chosen as host ; whether each requires its own particular host, or uses indifferently any one of several that it may chance to find within reach. Here then is an interesting field for original researches. Who will work it and thus contribute a new item to the sum of human knowledge ? Without waiting for this the gardener can note what plants are growing within reach of the one he wishes to cultivate, and by growing them in connection with it secure the required host.

The parasitic plants that will be named are only such as one might desire to cultivate for the flower garden, and are all to be found growing wild in Ontario. Two of these are perennials, which when properly taken up can be transferred immediately to the flower border ; all of the rest are annuals that must be grown from seed. With regard

to the perennials it is important to bear in mind that the suckers are developed only near the extremity of a rootlet, which forms the terminus of the fleshy roots, radiating horizontally in all directions. About the time that the seeds ripen that portion of the host's root which has been fed upon will have decayed, and the suckers getting no more nourishment also perish. Obligated now to seek supplies elsewhere the tip of the root begins to extend itself and continues to elongate until it meets with a live root of a suitable host plant, and then it develops a new sucker upon the newly found root. These perennials are the two which will now be briefly described.



FIG. 1920—WOOD BETONY.

PEDICULARIS CANADENSIS—Linnaeus. Wood Betony. A low growing plant bearing red or yellow flowers in short spikes, with fern-like foliage, blooming in May and June in dry woods throughout Ontario. It is very abundant in the neighborhood of Toronto. (See Fig. 1920) an outline sketch of a small flower cluster with only the stem leaves.

PEDICULARIS LANCEOLATA Michaux. Swamp Lousewort. The flowers of this

species are yellow, blooming from August to October. Grows in grassy swamps in Cayuga, Haldimand County, and in Malden, Essex County. (MacLagan.)

In growing the following, which, save one, are annuals, or at most biennials, it will be necessary when gathering the seed, or before, to make careful note of the plants growing within reach of their roots, and to either secure seed of all of them or to transplant them to the border, so that the roots of the Parasite growing from the seed may have no difficulty in finding very soon the roots of the host.

CASTILLEIA COCCINEA, Sprengel. Scarlet Painted-Cup. This very showy scarlet-bracted annual or biennial grows in warm, sandy soil, from Belleville, Hastings County, to the Detroit River, and is in flower from May to July. Mrs. Traill in her studies of "Plant Life in Canada," says of it: "The whole plant is a glow of scarlet, varying from pale flame color to the most vivid vermillion." It used to be abundant on the banks of the Humber River, near Toronto, but it is gone; the beauty of it caused every

one to pluck it; so no seed could ripen. Thus it is with many of our wild wood beauties; they are fast disappearing.

See Fig. 1921, showing stem leaf and a separated flower.

CASTILLEIA ACUMINATA Sprengel. Lance-leaved Painted-Cup. This is perennial, the bracts are yellowish or greenish, white or purple,

and is in bloom from June to August. It grows in moist soil on Michipicotin Island, and at the Hudson Bay Post, entrance to Nipigon River, Lake Superior. (Macoun.)

DASYTOMA PEDICULARIA, Benth. Fern-leaved False Fox-Glove. A beautiful plant, both in foliage and flower; its numerous orange-tipped, half-opened buds, profusely scattered among the fully open, rich yellow blossoms give to it a very attractive appearance. It is yet abundant in the dry, light soil of the wooded banks of the Humber River, near Toronto; where it may be found in bloom in the month of August. Reported at the Niagara River and Burford Plains, Brant County.

See Fig. 3, an outline sketch of one side of a branch, showing an open flower and leaves.

DASYTOMA VIRGINICA, Britton. Smooth False Fox-Glove. Is usually to be found in company with the species above named; it is of a more robust habit, foliage reminding one of that of the oak, hence the name given to it by Pursh, "Oakleaved." The flowers are large, an inch and a half to two inches



FIG. 1922—FALSE FOX GLOVE

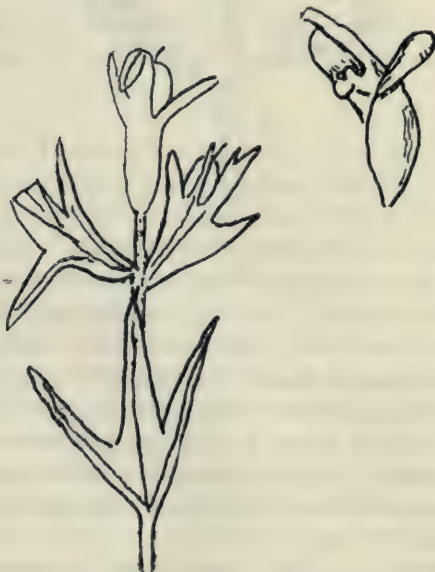


FIG. 1921—SCARLET PAINTED CUP.



Fig. 1923—GERARDIA.

long, of a light yellow. Abundant near Toronto, blooming in August, and reported at the Niagara River, in Cayuga and Malden Townships (MacLagan); near Hamilton (Logie), and near London (Saunders).

GERARDIA PURPUREA Linnaeus. Large Purple Gerardia. Plant grows from one to two feet high; bears broad purple flowers an inch long in August and September. Found at Niagara Falls (Burgess), and Windmill Point, Lake Erie (D. F. Day).

GERARDIA PAUPERCULA Britton. Small-Flowered Gerardia. This is from six to

twelve inches high, exceedingly pretty, with numerous rose-purple flowers about three-quarters of an inch in length. It is very abundant in the moist sand of Toronto Island, blooming there in August. Its range is from Ottawa to the Lake of the Woods, in moist soil. See Fig. 1923, showing a branch with flowers.

GERARDIA TENNIFOLIA Vahl. Slender Gerardia. A very slender plant, from six to 24 inches high, with narrow linear leaves and light purple spotted flowers less than an inch long, appearing in August. Macoun says on dry, sandy banks of the Humber River, near Toronto, but the writer has not yet been so fortunate as to meet with it there. On Prince's Island, near Hamilton (Logie); in Niagara and Malden Townships (MacLagan).

Toronto.

D. W. BEADLE.

SOME APPLE LORE.—Apples were formerly underestimated, they were scarcely considered a fruit rare enough for the consideration of the epicure, unless, indeed, they formed a part of some elaborate dessert, compounded and cooked by a skilled housekeeper. Apple jellies, puddings, pies and cakes might do, but plain raw apples were fit only for school-children, vegetarians, or the poor. All this is now changed and the apple has come to its own again. But if its flavor has been at various times slightly esteemed or discredited, at least its wholsomeness has been steadily recognized. "Apple sayings" are frequent, both in our country and in England, all of which testify in favor of the fruit. In the "west countree" there are four such :

An apple a day
Sends the doctor away,

is the first and briefest. Then follow in the order of their vigor, three more :

Apple in the morning,
Doctor's warning.

Roast apple at night,
Starved the doctor outright.

Eat an apple going to bed,
Knock the doctor on the head.

A little less aggressive is one of the Midlands :

Three each day, seven days a week,
Ruddy apple, ruddy cheek.

More interesting than these is an old orchard verse which used to be recited on certain ancient farms on the plucking of the first ripe apples of the crop. Misfortune was supposed to follow its omission, and its utterance was quite a little ceremony, the first apple over which it was spoken being presented to a young girl, who halved and bit it before any further fruit was gathered, or at least tasted. Thus it ran :

The fruit of Eve receive and cleave,
And taste the flesh therein ;
A wholesome food, for man 'tis good
That once for man was sin.
And since 'tis sweet, why pluck and eat,
The Lord will have it so :
For that which Eve did grieve, believe
Hath wrought its all of woe—
Eat the apple !

S. REYNOLDS HOLE, D. D.



FIG. 1924. VERY REV. S. REYNOLDS HOLE, D. D.
Dean of Rochester.

AFTER reading that charming book "Our Gardens" by Dean Hole, we feel justified in giving place to a paragraph concerning this notable gardener clergyman, which appears in the *Agricultural Epitomist*, as follows:—

"Wit and wisdom in a delightful intermingling are embodied in the personality of the genial Dean of Rochester, and the same blend of happy qualities shines in all his writings.

"No wonder he is welcome and beloved by men in every class and station, but above all by those who share his passionate affection for flowers and garden.

"At eighty years of age he is the delight of all who know him personally or by reading his books. His 'Book about Roses' has run through fifteen editions, and is still 'run-

ing' if I may copy a phrase from the advertisements with which Mr. Penley booms his laughable play of 'Charley's Aunt.'

"To read one of Dean Hole's books is a kind of feast for an epicure. The solid food of information is so varied by the appetising adjuncts of wit and humour that nothing palls or satiates the reader. You commence with a few striking phrases which arrest the attention and stimulate the mental appetite. You are easily carried on through course after course of interesting matter. You find yourself deeply absorbed, before you know it, in the solid discussion of the main subject. By and bye a whimsical reminiscence lightens your reading ere your attention is tired and can begin to flag. Then come courses of sweets and you finish the book with satisfaction as you would finish an excellent dinner skilfully arranged by a master of cuisine and faultlessly cooked and prepared for you.

"Let me give an illustration or two from memory. I remember the opening phrases of the 'Book about Roses.' The idea they embodied arrested and stimulated my attention instantly. I felt the truth of them and the force of them. They declared that he who would have beautiful roses in his garden must have beautiful roses in his heart.

"I remember, too, a skilful enlivening by Dean Hole of his dissertation on manure for roses. I am myself engrossed in the question of manures. It is a question which fascinates me because I think I see in it the solution of the problem of humanity. The increasing crowds of men growing ever more dense as civilization advances will either become happier and further removed from want and misery as they grow thicker on the ground, or they will become a struggling mass of wretched and desperate competitors and antagonists. It is all a question

of conservation of manure of increasing or exhausting fertility.

"In this spirit I can read M. Ville or Justus Van Liebig with inexhaustible interest.

"Now when I came to Dean Hole's chapter on manure I wondered how he would treat it. I was not disappointed. The substance of information and advice was all there. So were the wise thoughts and deductions. But in the midst of the essay on what is necessarily a scientific and practical subject, there was a touch of enlivening comedy skilfully introduced as Shakespeare brings in the farcical interlude of comic grave-diggers to relieve the too deep interest of Hamlet.

"This is how I remember the incident in the chapter.

"The Dean is anxious to impress the reader with the value of horse-droppings for roses. He impresses the importance of saving and utilising so precious a material. He mentions his own high estimate of dung. And then comes the story.

"He was returniug to the Deanery one

day from a round of duty visits, and as he approached the home up the garden drive, he noticed that visitors had been in a carriage. Their horse or horses in quitting his home had dropped liberal deposits. The opportunity was not to be lost. He hastily turned into a side shed, secured a shovel, returned to the gravel path, picked up the deposits and hastened off with them to enrich the roots of some of his beloved rose trees. As he entered the Rosary—horror of horrors!—he met full face a party of ladies in holiday garb and smiles! The visitors in fact had not departed, but were still in the garden, and their first meeting with their host was under circumstances which caused his cheeks to emulate the glow of his own most deeply tinted rose-buds!

"There I think my recollection of the book and its apt enlivening is a fair tribute to the skill of the author. In the same way I could fill many columns with memories of his 'Memories.'

"May he be preserved to us until he is a hundred at least."

A NEW PACKING MATERIAL FOR FRUITS.

AN interesting experiment has just taken place in the matter of packing fruits in the colony of Victoria for shipment to England.

As is pretty generally known, apples and pears are now brought from the Cape of Good Hope and from the Australian colonies in boxes holding a bushel, which are stored on board ship in cool chambers. The fruits are merely wrapped in tissue [paper] and placed in the boxes.

Under this system, apples have for the most part come very successfully; but pears have been less satisfactory. Occasionally there have been pears from the Antipodes that have reached this country in a sound condition, but numerous consignments have

proved to be of little value, and the commission agent is never able to speak of such fruits or to gauge their value until they have been unpacked. The freight per bushel, from Victoria to London, for apples or pears so packed and stored on board ship in cool chambers, is 3s. 9d.

Instead of packing the apples wrapped in tissue only, in the case of several bushels that have recently arrived in London by the S. S. Wakood, a quantity of asbestos, or a preparation of this substance, has been used. The fruits were wrapped in tissue as formerly, and afterward embedded in the asbestos, each fruit being perfectly surrounded by this substance. Upon unpacking the case, the asbestos appeared to be

caked, but it was easily broken up, and then appeared almost like flour. We should suppose, therefore, that the fruits would be air-tight under such conditions, and this will account for the fact that as we saw them they were perfectly sound, and in excellent condition, although five months had elapsed since they were packed in the boxes. The apples were gathered and packed previous to May 5 last, but owing to some objection, we believe, on the part of the steamship companies, there was a delay of two months or more before shipment, and even then they travelled by the Cape route. The new system, should it answer to expectations, will possess several

advantages. The fruit may then be stored in the hold of the ship and the freight per bushel case will be 6d. instead of 3s. 9d. ; but as the packing material will displace a quantity of the fruits in each package, it may be well for present purposes to describe the future freight of the fruit as 1s. per bushel.

It must be remembered also that the asbestos is a valuable material in England, and it will be sold to as much advantage as will the apples. The result will be that the asbestos and fruit will be brought to England for less money than is now paid for the fruits alone.—*Gardeners' Chronicle*.

A BAD INSECT PEST.

One of the worst pests that the apple grower has to fight is the railroad worm, called also the pulp worm, and the apple maggot. The fruit growers of Vermont are unanimous in giving this insect the first rank among their insect enemies.

It is worse even than the tent caterpillar. That can be entirely overcome by spraying, whereas spraying has no effect on the railroad worm.

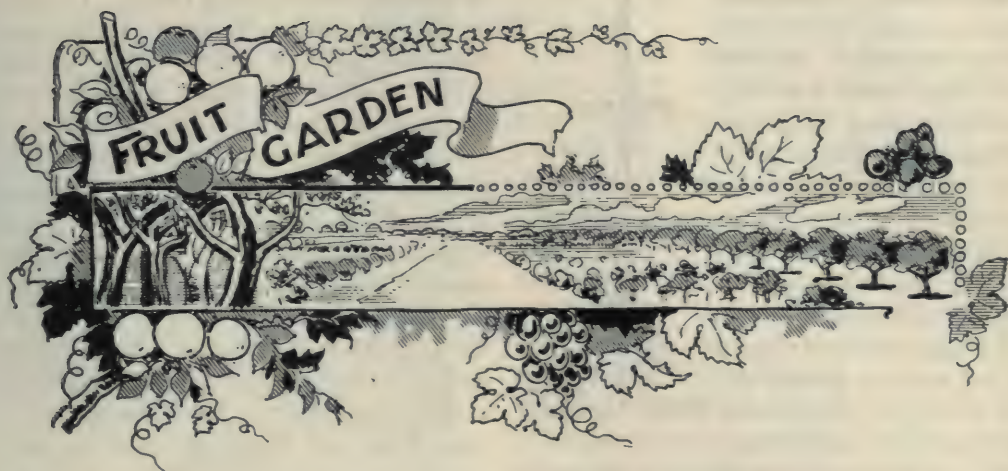
The railroad worm, or apple maggot, is the cause of the pulpy, punky condition of the apples as we find them now in the stored fruit and in that offered for sale. The eggs are laid just under the skin of the apple by a small fly. This fly begins her work in June and keeps it up pretty much all summer, so that there may be worms of all ages in the apples. She has a strong preference for sweet apples, and has practically ruined the

crop of Talmans this year. Still she works in all varieties, sour as well as sweet, and causes hundreds of dollars' loss to the fruit grower.

We have consulted the authorities at the Vermont experiment station, and they frankly admit that no satisfactory way of dealing with it has been discovered. They say that considerable good can be accomplished by keeping hogs or sheep in the orchard to pick up the windfalls. These windfalls are usually full of apple maggots, and the hogs digest them out of existence.

Experiments are being made at various places in the United States, and we hope eventually to know some more effective way of dealing with this pest. But for the present we must rely on the practice of destroying the windfalls.





FRUIT CULTURE—VIII.

THE CURRANT.

THE fact that the currant is not only one of the most healthful of fruits, but also one of the hardiest and most productive, should ensure it a prominent place in every farmer's garden. Unfortunately this very fact causes it to be too often badly neglected. The average currant bush grows at its own sweet will, and the owner has little conception what an immense difference in the size and quality of the fruit would be made by thorough cultivation. The currant will thrive well in any well drained soil, coolness and moisture being necessary for the production of the best fruit. If the soil is too light and hot, the fruit will usually shrivel before maturing, and in such soil a mulch of some sort for two or three feet around the bushes is advisable. Good, strong one-year old plants will be as good as older ones, and cost less. Anyone, however, can grow his own plants by taking cuttings in the fall from the well-ripened wood of the past season's growth. Make the cuttings from six to ten inches long, plant in September in a row, rubbing off the lower buds when planted, and cover

when freezing weather approaches with straw or coarse manure, or the cuttings may be tied in a bunch and buried with about two inches of soil over them, and covered for the winter by coarse manure and then planted early in spring. By next fall they should make good, strong roots. (Fig. 83 and Fig. 84.)

As the currant is a rank feeder, a liberal application of manures should be given; it fact no fruit will respond so quickly to generous treatment in this respect. Thorough and systematic pruning is necessary with the currant as with the gooseberry. This may be done very early in spring before the buds unfold. The fruit is borne on the previous year's shoots as well as on the older growths, but as a rule the younger the wood the finer the fruit. The superfluous young shoots should be cut out, and also all wood over three years old. There must be a constant renewal of strong, healthy wood, if good fruit



FIG 83

CURRANT CUTTING.

is to be grown. The old practice of growing in tree form is now discarded. Four or five main stems are best, and renew these from time to time by judicious pruning. If the young wood has made such rank growth as to make the bush straggly the ones that are left may be shortened back to advantage. Bushes treated in the way suggested will last for a good many years,



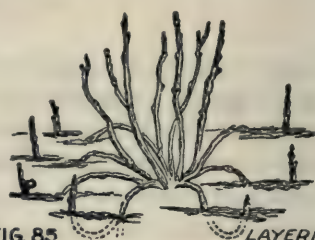
but it is well to replant when over ten years old. Where it is desirable to rejuvenate old bushes, they may be cut off close to the ground, and, with well-rotted manure forked in around them, a vigorous top will soon be formed. The cultivation of the currant should be constant and shallow, as the roots run near the surface. From five to six feet apart is as close as the bushes should be planted. The insects chiefly troublesome to the currant are the familiar currant worm which is the larva of a saw-fly; the currant louse and the currant borer. The currant worm is controlled with great ease if the work is done directly the worms hatch. For these and the currant louse see F. Institute Report '96-'97, pages 175 and 192. The borer is the larva of a wasp-like moth, the eggs are laid on the stem from late in May till June. The borer cuts the pith up and down in the stem, and emerges as a moth again that May. Cut out and burn all infected stems in the early spring.

VARIETIES.—Of the red varieties the *Cherry* and *Fay's Prolific* are probably the two best, in white the *White Grape*, and in black, the old *Black Naples*.

THE GOOSEBERRY.

The gooseberry is essentially a northern plant, and makes much the same demands

on the soil as the currant does. It will be found most successful in a rich and strong clay loam, and will thrive, like the currant, in partial shade, providing that it gets the necessary manure. Well-rotted cow manure is probably the best fertilizer for the gooseberry, supplemented with a dressing of hardwood ashes or muriate of potash when fruiting time arrives. Generous treatment in this respect must be given to get fine fruit, as, like its relative, the currant, the gooseberry is a gross feeder. Propagation by cuttings is less successful than with the currant, but those who wish to grow their own plants can easily do so by the simple process of "layering." If a large number of plants are required the old bushes should be cut back almost to the



ground in the autumn. About July 1st, when the bush has thrown up a large top of vigorous young shoots, earth is mounded up round the bush, leaving only a few inches of the tips exposed. In the fall the majority of the new shoots will have rooted and may be removed and planted. If only a few plants are required a few of the lower shoots may be bent down about July 1st and covered with earth except the tips. Or the suckers which spring up round the bush may be transplanted. Thorough pruning is emphatically essential to success in gooseberry culture. Fruit is produced from all parts of the bush except very old wood and the new growths. But with a vigorous growing bush from a third to one-half the wood should be annually cut away. The best fruit is borne on one year old wood,



and the aim should be to continually remove the older wood, and have a sufficient number of these strong healthy one year old shoots. It may be said of the gooseberry, as it may be of the grape vine, that the special method of pruning is of less importance than the fact that pruning must be regular and vigorous. Whether the bush system or tree system is followed, training to spurs or to long shoots, the important thing is that there should always be left a good supply of bearing wood, but not a tangled-up affair with a network of wood that can only produce a small and inferior class of fruit. The distance of planting should be the same as that of currants, and the cultivation thorough and shallow. Mulching will undoubtedly pay in hot seasons. Unless the owner is prepared to give great care to his plants he had better confine himself to the American varieties, as the larger Eu-

ropean kinds are particularly subject to mildew.

VARIETIES. — *Downing*, a vigorous and productive variety, bears fruit of a whitish-green color, smooth skin and good quality. *Pearl* is very similar. *Houghton*, a slender grower with red fruit, somewhat smaller than the other varieties named. Of the European gooseberries, *Industry*, a large dark red, and *Whitesmith*, a large yellowish-green, are recommended. A large number of remedies have been suggested for mildew of the gooseberry, but by far the best is the application of potassium sulphide (liver of sulphur), at the rate of one ounce to two gallons of water. This should be applied directly the buds swell, and at least twice more at intervals of a week or ten days. The currant-worm, which attacks the gooseberry with equal readiness, is referred to in the chapter dealing with currants.

RED RASPBERRIES AND BLACK CAPS.

These valuable fruits are so common throughout Ontario that little need be said as to their great value. In the canned state for winter use there is no fruit which retains so delightfully the freshness and aroma of the ripe fruit as the red raspberry. It is a veritable whiff of summer which follows the opening of a jar of "*Cuthberts*" in mid-winter. There are three types of the red raspberry now in general cultivation, those from the European wild raspberry, such as *Antwerp* and *Franconia*, those developed from the American wild raspberry, such as *Cuthbert*, and the hybrids, such as *Shaffer*. The European varieties are less hardy and more likely to suffer from the hot sun in this country. Many of the hybrids are marvellously productive and vigorous, but the fruit is usually soft and the color unattractive. The raspberry is a biennial as far as the cane is concerned, fruit being produced on the cane which was grown the

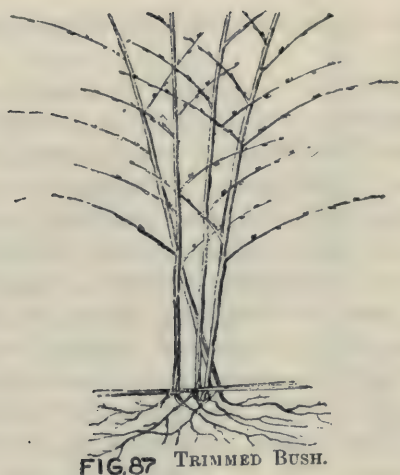
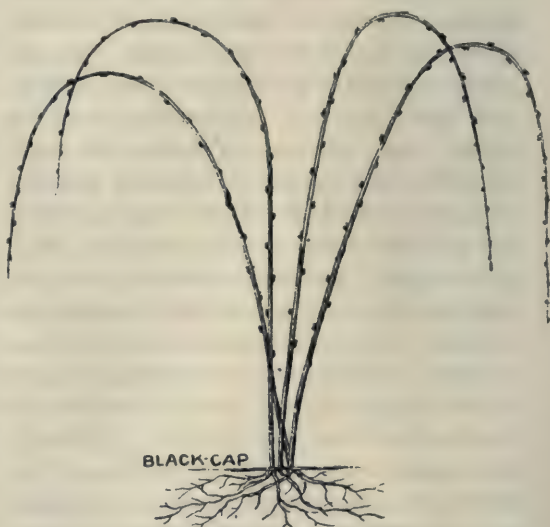


FIG. 87 TRIMMED BUSH.

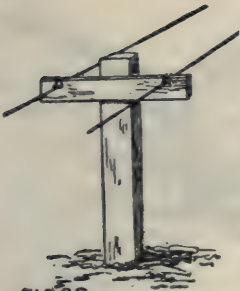
previous year. In other respects the plant is a perennial, and with good care a plantation will last profitably ten or twelve years. A deep rich and moist sand is the most suitable soil for the red raspberry. The black-cap will thrive equally well on a fairly heavy clay loam, but in any case the soil must be well underdrained and the reverse of compact, for, of all fruits, the raspberry is the first to suffer from an excess of moisture and from drought at the ripening period. Vigorous shoots of the previous year's growth are the best plants to set, and in all cases they should be cut back to eight inches high after planting. In June the young shoots may be transplanted, if the work is done carefully in damp weather, but the older plants are preferable. If cultivation in rows is desired the plants should be set three feet apart and the rows six feet apart. The red raspberry, however, throws up such a large number of suckers, most of which have to be cut away, that a good practice is to plant five feet apart, and cultivate both ways. In this way, not only are the superfluous canes kept down more easily, but a finer quality of fruit, and just as much, will be produced. If fall planting is done the plants should be set out by the middle of Septem-

ber, and well mulched on the approach of winter. The question of pruning is an important one with the raspberries, and one on which a great difference of opinion exists. Great stress used to be laid on the value of summer pruning, and for the black-cap it is all right. The black-cap propagates itself by rooting at the tip, and its efforts are bent in the direction of making strong canes. Pinching back the young canes, therefore, when about two feet high will have excellent results. The cane will soon throw out a number of laterals, and a self-supporting strongly-branched bush will result (see Figs. 87 and 88). With the red raspberry the case is different, the pinching back of the young canes induces the plant to produce more suckers, and the laterals, which are eventually thrown out, are often weak and get killed back during the winter. Cultivate shallow and often during the summer, letting the canes grow their full length. In the late fall cut out the old canes which have fruited, and in the spring remove superfluous canes, leaving only four or five in a hill, and cut back the remaining canes to a height of about three feet. The work of



BLACK-CAP

FIG. 88 UNTRIMMED BUSH.

FIG. 89
Trellis for berries.

where the cold is so severe that the raspberry will not stand without winter protection, the pinching back of the young shoots when not more than eighteen inches high may be practised. A low bush will be formed which will be covered with the snow.

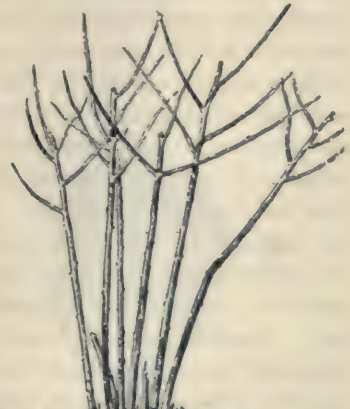
Or bending down and covering may be done. Before frost comes remove the canes as suggested above, leaving about four canes to the hill. One man with spade or shovel then removes a little earth from the base of the plant, the other presses down the canes

with a fork, and the first man puts earth enough on to hold them in place. Such canes must be carefully taken up in the spring when danger of frost is past, but not left long enough to start growth. If such a practice is adopted it will be necessary to put up wire trellis to support the canes. A convenient kind in which the wires are easily removed is shown in Fig. 89.

If covering is not practised where the winter is severe, but reliance placed on a deep covering of snow, it is important to pinch back the canes early. Figs. 90 and 91 will show how to get a short sturdy bush with good laterals.

VARIETIES.—Black — *Souhegan*, *Hillborn Gregg*. Very promising new kinds are, *Older*, *Conrath*, *Smith's Giant*. Red — *Marlboro'*, *Cuthbert*. Yellow — *Golden Queen*. The best purple variety — *Shaffer* and *Columbia*.

INSECTS.—The raspberries are fairly free from insect pests of a very destructive character. The snowy tree-cricket occasionally slits the canes, depositing in the pith a number of yellowish, cylindrical eggs. Such canes can be removed and burnt. The young crickets feed on plant lice, so they probably do as much good as harm. The crown-borer and cane borer are sometimes injurious, but infected canes can be readily

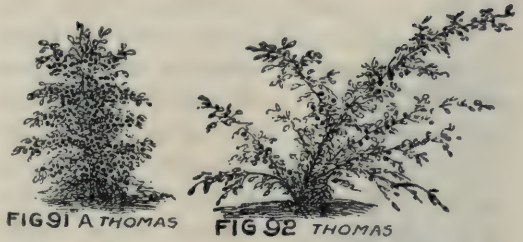
CARD
Root-gall of raspberry.FIG. 90
Well pruned.FIG. 91
Poorly pruned.

seen and should be removed and burnt. The small green larvæ of the raspberry sawfly are frequently injurious to the foliage. These can be destroyed by an application of hellebore, one ounce to three gallons, or with Paris green. Of diseases, the two worst are *anthracnose* and *root or crown gall*. The former, a fungus disease, attacks all parts of the plant above ground, showing on the young canes in grey blotches and discolorations, leading to weakness of the cane, which sometimes dies before fruiting, or on which the fruit is poor and shrivelled. Bordeaux mixture will assist in checking this disease, but it is well in small plantations to at once root out and destroy all sickly canes.

The cause of root or crown galls is very obscure, and one can only advise the rejection and burning of all plants so affected at planting time.

THE BLACKBERRY.

Much of what has been said as to necessary conditions in successful raspberry culture is equally true in its application to the culture of blackberries. The hardy, vigorous nature of the plant enables it to survive under very unfavorable conditions, and for this reason sufficient attention is not always given to its real needs. It will thrive on a heavier soil than the raspberry, but moisture is essential, and if the soil is not deep and porous it will be necessary to make it so by underdraining. Ripening late in the season, drouth is usually its worst enemy, and must be fought by proper drainage and cultivation if the magnificent possibilities of this fruit are to be realized. The blackberry, especially when in full bearing, will amply repay liberal treatment in the matter of manure. Propagation is by means of suckers. Planting may be done in the fall if a thorough covering is put on the newly set plants for the winter. In the spring planting, the last year's growths should be dug



and planted as early as possible, so as to give every chance for the production of good canes in the second year. Some of the most successful growers practice the hill method of culture, planting some seven feet each way. When in rows, eight feet between the rows and three feet between the plants is advisable. For the first two years, hoe crops may be put between the rows. As the rows fill out, and a larger number of suckers are produced, it will pay to reduce the numbers through the growing season by cultivation and hoeing. From the grower's point of view a superabundance of suckers may be regarded simply as weeds, robbing the plants of both moisture and food. In gardens, and where the ground is likely to become very dry or hard towards fruiting time, a pretty heavy mulching will yield excellent results. Summer pruning is absolutely necessary if a strong compact hedge is to be formed. The young plants should be pinched back when from two to three feet high; the cane will produce a number of vigorous laterals, which should be pruned back the following spring to about eighteen inches in length. Stress must be laid on the necessity for this early pinching back. Fig. 96-91 in the chapter on the raspberry shows the difference between the early and the late pinching back process. A top-heavy, awkward lot of canes will be the result of deferring this work, to say nothing of an undue amount of broken canes, scratched hands and torn dresses. Fig. 91A shows the neat, compact and properly pruned bush, and Fig. 92 a neglected cane.



FIG 93

CARD

It will be necessary to have a wire trellis where laying down canes for winter is practised; two wires are sufficient, even one will often answer the purpose, and in fact under most conditions the support of a wire will do much to keep the row in good shape.

Fig. 93 is an illustration of a well-kept plantation with the trellis support. The operation of laying down for winter was described under the raspberry. The varieties chiefly grown are *Snyder*, *Kittatinny*, *Lawton*, *Taylor* and *Early Harvest*. Of these *Kittatinny* is the best quality, fairly hardy and productive, though rather subject to "red rust." *Agawam* and *Snyder* are both

hardy and productive, though not very high in quality.

The only disease which very seriously or widely interferes with blackberry is the red orange "rust." This fungus spreads with great rapidity, and although systematic spraying with Bordeaux mixture may check it to a certain extent, the infested canes should be cut and burnt immediately they are noticed; a careful watch should be kept for the first sign of trouble, and only perfectly healthy plants set in. The diseased plants are easily distinguished by the peculiar golden color of the leaves in early spring, and the subsequent covering of the leaf with a mass of orange-colored spores.



FIG 94.

THOMAS

Snyder.



FIG 95 THOMAS

Kittatinny.

PRUNING.

GRAPES.

ALTHOUGH out of the order of ripening its fruit, the grape is taken for the purpose of bringing out some of the mooted questions now engaging the attention of fruit growers as to pruning for inducing increased weight and fruitfulness.

In September, 1882, several members of the N. J. State Horticultural Society spent three days visiting the noted vineyards on both sides of the Hudson in and near Poughkeepsie. During this visit a call was made on Charles Downing, and the pruning of the grape as to the length of cane to be left in certain varieties of grapes found to be defective in setting of fruit on the bunch came up. Mr. Downing stated that in pruning the Diana the best bunches were produced on short spurs on a main cane at least 50 feet in length. Several other experienced growers stated that many of the Rogers' Hybrids, such as Salem, could not be successfully grown on main cane less than 20 feet in length. The pruning of the Eumelan also came in review. The Delaware was found to be pruned to long spurs or canes of from 20 to 25 eyes, as the best bunches were grown at or near the remote end of the cane. During this visit the experience of a few growers seemed to point to the fact that the time of the year when the pruning was done might influence the potency of vine in the production of size and weight of bunches as well as the position of fruiting eyes on the new growth of cane. Late pruning was thought to favor these characteristics.

The next step was that as the fruiting eye of the grape is a compound one, or as it has a small supplemental fruit eye by the side of the large ones, certain varieties, notably

the Niagara, produced the best and largest bunches on the cane from the secondary or supplementary eye, starting out after the first shoot had made some growth.

To-day the planting of mixed varieties near each other, or the pollenization of one variety by another is a great factor in the size, weight and setting of the fruit on the bunch. Some most successful cultivators of the grape follow the close or short spur system on a comparatively short cane, but place great reliance on pollenization by other varieties.

To be a successful pruner requires that the person performing it should understand the distinction between fruit and wood-buds, as the pruning instrument must have an educated mind to govern what it does.

PLUMS.

The advent of the Japan plum in its abundant and early fruiting has modified to a great extent the pruning of this fruit. The cutting must be severe, and a modification of pruning and of thinning of the fruit must be practised. It may safely be laid down as a rule in fruit growing that pruning the growing fruit by thinning must be followed, if large, handsome, good flavored and fruit free from rot is desired. It is claimed that late pruning of the plum after the fruit is set tends to the formation of a much larger number of fruit buds for the next year's crop, and the Massachusetts Experiment Station is now carrying on a series of experiments along this line. The best plum growers in the State of New Jersey follow cutting away at least one-half of the last year's growth at each pruning and severely thin the fruit remaining on the tree.—*American Gardening.*



TIMELY TOPICS FOR THE AMATEUR—VIII.

THE shortening hours of sunlight and the gradual, but surely lessening power and genial warmth of the autumn sun will cause the enthusiastic plant-lover to watch with mingled feelings of regret and sorrow the fast fading freshness and beauty of many summer favorites of the garden.

Autumn frosts may, however, be lenient in their usually destructive visitations and allow a few stray blossoms or bright leaves to lend their more than welcome appearance to aid in brightening up the lawn and garden during the chilly days of autumn. The pleasure that these bright and cheerful reminders of past summer-tide beauty bring with them may be considerably enhanced and prolonged, perhaps until early winter, if due care and attention is still devoted to autumn work in the garden.

The grass and walks should be kept trim and neat, all weeds, decayed foliage and blossom removed regularly and often, so that the cheerful and bright appearance of lawn and garden may harmonize and be somewhat in keeping with the glowing beauty and brilliancy of autumn foliage on surrounding tree and shrub. The removal of all dead and decayed foliage will not only

add greatly to the pleasant and cheerful appearance of lawn and garden, but will also materially assist those plants that are still struggling to maintain their bright summer-like aspect, despite the fast decreasing brightness and warmth of the haze-dimmed autumn sun.

The peaceful quiet days of October, when all nature seems to be in a restful mood—preparatory to the more turbulent and trying winter season—is a suitable time for the horticulturist to look back and take note of success or of non-success in matters pertaining to the garden that have occurred during the past summer season. This can be more easily done now, while there is still sufficient evidence of success or failure visible, than later, when all vestige of summer blossom or foliage is either blackened by winter frosts or buried beneath nature's protecting blanket of winter snow.

Many ideas of changes and improvements will doubtless suggest themselves to the observant and reflective plant-lover, many of which perhaps can be carried into effect much better during autumn and early winter than if left until the hurry and rush of spring work commences. All alterations in walks, flower beds or borders, or the



FIG. 1925. VASE OF HERBACEOUS PEONIES.
(Reduced.)

making of new ones, is best done at this season of the year, as the ground has time to settle firmly, ready for any planting required to be done in spring. Many of the hardier class of trees and shrubs can also be planted to advantage during the autumn season, if the ground is in suitable condition. Lilacs, and the hardier varieties of Spireas, such as *S. prunifolia*, *S. Van Houtii*, etc., *Diervillas*, *Philadelphus* (mock orange), *viburnums*, *Kerria*, *berberis*, *cydonia* (Japan quince), amongst others, can be safely planted during early autumn. In the colder and more northern sections of the country, spring planting is probably

advisable. A heavy mulch of long strawy manure should be applied to all newly planted deciduous trees, etc., early in the winter, but not until after the late autumn rains are over. The greater part of this mulch should be removed in early spring as soon as the frost is out of the ground. Tender varieties of spireas, deutzias, tamarisk, forsythias, herbaceous and shrubby hibiscus, etc., succeed best if planted in spring. Herbaceous perennials, with a few exceptions, succeed best if transplanted in spring, just as the new spring growth commences. Pæonies, German iris, dicentra (bleeding heart) and varieties of *hemerocallis* (day lilies) can be planted early in the fall if desired. These also will benefit if mulched during the winter with long manure, leaves, or any similar material.

It is always advisable, before removing or destroying any tree, shrub, or plant—or any prominent feature—from lawn or garden, to consider well what effect the removal will have on the surrounding landscape. By the removal of some tree or shrub that may have been thought ineffective, either from a picturesque or useful point of view, it often happens that some other object even more objectionable than the one removed may be exposed to view. In fact, in all matters pertaining to landscape gardening, whether on a large or small scale, always endeavor to see as clearly as possible the full and complete effect of contemplated alterations, or expected improvements, before commencing to carry them into operation. Regrets are useless after the axe or spade have completed their work of destruction, and will not remedy the mischief wrought or replace the object removed. Elaborate and well thought out plans of every minute detail regarding the utility and appearance of houses or buildings are considered absolutely necessary before commencing to

erect them, and even where almost immediate effect and results are to be attained, or alterations effected with comparative ease, the surrounding grounds are oftentimes laid out and planted in an haphazard, hit-or-miss kind of style, with perhaps very little regard for present effect, and even less thought and study given to the ultimate requirements and appearance of trees and shrubs that will take years perhaps to develop their suitability for the position they are to occupy. In carrying out alterations or improvements, even when the lawn or garden is quite limited in extent, ample scope will be found for an amount of study and thought, as well as a display of artistic taste oftentimes considered altogether unnecessary until ineffective and perhaps disastrous results prove conclusively the necessity for the exercise of care and discretion in these important matters.

Another important and often neglected point necessary to be successful with trees and shrubs is the matter of drainage. Many of the choicest and most beautiful of these, as well as many choice varieties of herbaceous and other flowering plants, have been discarded and rejected in many localities, because of their apparent want of hardiness, when the real cause of failure has been the want of proper drainage. It is a useless expenditure of time and money to plant expensive trees and plants on ground that is soured and soddened with stagnant surface water, or with cold water that soaks down in early spring, perhaps from higher ground in the neighborhood. This soakage or surface spring water can only be got rid of by sub-soil or under draining the ground, an expensive and laborious operation, but one that will repay its cost in a short time, if the work is thoroughly and efficiently carried out. Autumn and the early winter is the best time for digging and constructing drains, as it gives time for the soil to settle down somewhat during the winter.

The location for drains is best selected and marked out in early spring.

In small plots of garden, where perhaps a proper system of drainage cannot be carried out and the ground is wet, loose stones or coarse rubble can be used to advantage for temporary or makeshift drainage purposes. Dig out the soil first about 2 or 3 feet deep where a flower bed or border is to be made, or a tree or shrub planted, fill in about 10 or 12 inches of good sized stones or coarse gravel and rubble, over this place a thin layer of fine brushwood or coarse weeds and fill up the excavation with good soil as required. This method is often very beneficial to newly planted trees, etc., for a short time, but a properly constructed stone or tile drain will be found more effective and cheaper in the end than any temporary or makeshift system of drainage.

THE GREENHOUSE.

All greenhouse plants, except a few hardy and half hardy plants, should now be safe in their winter quarters in the conservatory or greenhouse. Hybrid perpetual roses in pots, required for winter forcing, succeed best if allowed to stay outside during a few sharp frosts. Six or eight degrees of frost for a few nights will help to ripen the wood, and this ripening process is a very desirable point to secure with H. P. roses and all hardy plants required for forcing in winter. Before taking the roses into the greenhouse prune them back rather severely, leaving only about an inch or two of the past year's growth. In about a week, or perhaps longer, the buds will show signs of growth. The plants should then be repotted, shaking carefully out about half of the old soil. Repot them firmly into well enriched, clay loam potting soil, water them thoroughly once and then withhold water at the roots until the soil shows signs of dryness. Syringe the

growth of the plants daily. Hybrid tea roses required for forcing can be treated in a similar way, with the exception that the ripening process must not be too severe, as hybrid teas are more tender than H. P. varieties.

Plants of *Hydrangea otaksa* and similar varieties of these useful half-hardy plants will require the protection of a shed or out-house for a few weeks before severe frosts, previous to being placed in their winter quarters in the basement or cellar, or under the greenhouse benches. The pretty little



FIG. 1926. SHRUBBY HIBISCUS. *H. ALBA PLENA*.

Rose of Sharon.

On Lawn of W. H. Gillard, Esq., "Undercliff," Hamilton,
Sept. 10, 1900.

free flowering hardy shrub, *Deutzia gracilis*, succeeds splendidly in the greenhouse in winter. Plants of this dwarf growing *Deutzia* can be taken up from the open ground, potted into ordinary potting soil, and in February or March will develop a wealth of their snow-white blossoms, with very little care and attention. Fancy caladiums, Tuberous begonias and gloxinia bulbs can be dried off gradually and placed away in their winter quarters. The caladium bulbs will probably winter best if left undisturbed in the pots, and the pots can be laid on their sides under the greenhouse

bench, not too near the hot water or steam pipes, however, to dry them out too severely. Rats and mice must be guarded against, as these unwelcome visitors are very partial to a banquet of high-priced caladium bulbs. Tuberous begonia or gloxinia bulbs can either be left in the pots and stowed away in a dry place in a temperature about 45°, or the bulbs and tubers can be shaken out from the pots, after all growth has ceased, packed away in sand or dry soil in boxes, and placed in any fairly dry, cool place, free from frost. A temperature of 45° to 50° will suit them very well.

If seedling cinerarias, calceolarias, or plants of pelargoniums, are still out in cold frames, careful watch must be kept on them, for, although these plants like a cool temperature, a very slight freezing injures them permanently. Violets that have been kept outside should be brought into the greenhouse if required for early flowering purposes, or they may be left out until later, or even until spring, if a sash is placed over them, and a little care and attention given them during the winter. Roses planted out on benches should be allowed to produce their flowers now as freely as possible. The disbudding of chrysanthemums, as mentioned in September number of Journal, will have to be attended to as required.

If mildew appears on roses or chrysanthemums, paint the steam or hot water pipes with a thick paste of flour of sulphur well mixed with water. Apply this mixture to the pipes, and on a chilly night, when a little extra heat will not hurt the plants, get up a good circulation of heat in the pipes sufficient to raise a strong sulphury smell through the greenhouse. If this extra heating process is repeated about once a week until more severe weather, it will effectually prevent the spread of this dreaded fungous disease. Sulphur must

never, however, be put on brick flues, or on stove or furnace pipes in the greenhouse, or anywhere so that it comes in contact with direct fire heat, as the fumes of burnt sulphur, even if very slight, will soon destroy a whole collection of plants. Flour of sulphur can be sifted finely on the foliage of plants affected with mildew, to advantage.

Purchase Dutch and other winter and spring flowering bulbs as early as you can. Select firm, clear looking bulbs of good medium size, in preference to large bulbs that are not firm and solid. Pot the bulbs into ordinary potting soil; the top of the bulb should be just below the surface of the soil when potted. Water thoroughly once so as to moisten all the soil well and place the pots in a cool dark shed or cellar for a few weeks until the bulbs have made good roots, when the pots can be brought into the greenhouse as required. For bulbs required for forcing, a frame placed outside is a very good place to start root action. Pots should be covered about an inch deep in light soil or coal ashes and protected from severe frosts. A covering of sand or ashes will also benefit those started in a shed or cellar, as it prevents drying out. (For culture of bulbs see November number of *Horticulturist*, 1899.)

Early in the day is the best time for watering and syringing plants at this season of the year. A little fire heat will be beneficial in damp, chilly weather, even if there is no frost. Coleus, foliage begonias and similar plants often suffer from damping off, if the temperature is allowed to drop too low continuously. A temperature of 50° to 55° at night, and 60° to 75° in the daytime will suit a general collection of plants very well. Avoid extremes, either of heat or moisture. Close the ventilators early in the afternoon and avoid cold draughts on the plants. Keep the floors well dampened, it will obviate the necessity

of syringing so often, a process that is sometimes risky at this season when perhaps there is no fire heat and the weather damp and chilly. If you have no objection to the smell of raw tobacco, sprinkle some stems in places under the benches and renew the supply every week or two; this will keep down green fly or aphids. Fumigating with damp tobacco stems is the most effectual method of getting rid of these pests, but unless carefully done, so as not to allow the stems to burst into a flame, there is risk of burning or scorching the foliage of tender plants. Coleus, heliotrope, and Maiden Hair ferns are very easily injured in this way. The concentrated liquid "nicotine" sold by seedsmen, is perhaps the best preparation of the kind for amateurs. It is cleaner to use, the fumes from it being less pungent and disagreeable than from raw tobacco.

Sufficient potting soil, sand and leaf soil, should be brought into the potting shed or cellar, so as to be in good condition for use during the winter. Secure a fresh supply of sod for potting soil for use next season. Sod should be cut three or four inches thick, taken from where the soil is loamy, and stacked up neatly. Two thicknesses of sod and one of well rotted stable, or cow manure, is the best nucleus for a potting compost obtainable. The layers of sod and manure, as mentioned, can be continued until a sufficient quantity has been secured. The sod should be stacked with the grassy side downward.

WINDOW PLANTS.—The window should be well furnished now with plants for autumn and winter effect. If a few geraniums have been grown on specially for winter flowering, and not allowed to flower during the summer, the window will look bright and gay with their showy trusses of bloom until the early winter flowering bulbs and other plants commence to flower. Roman hyacinths will be the

first of the winter flowering bulbs to claim a position in the window, followed later by varieties of narcissus, or a pot or two of the pink or blue varieties of the Roman hyacinths, as well as some of the later flowering Dutch hyacinths. The Von Sion narcissus (daffodil) is perhaps the easiest grown and most remunerative of the Narcissi family. The trumpet daffodils are also useful and pretty if a variety is required. Dutch hyacinths and some of the Polyanthus narcissus, such as Double Roman, Grand Monarque and Staten Island, succeed well in the window, not forgetting a few bulbs of the Narcissus Poeticus, or the improved variety Ornatus. The last two varieties I consider to be the gems of the Narcissi family. A nice pot of them when in flower has a strikingly beautiful effect in a window of mixed plants. A few jonquils and perhaps a few bulbs of the pretty blue flowering Scilla Siberica—the “Forget-me-not” amongst bulbs—will complete a useful list that will give a succession of flower from early winter until spring. These, with the more permanent occupants of the window, such as geraniums, cacti, begonias, etc., and perhaps a hanging basket, or a few hanging or bracket pots filled with some trailing plants that have occupied the window box, or perhaps a rustic stand outside during summer, will make a gay and attractive window during winter. Watch closely for the first signs of insect pests, especially red spider and green fly. Apply tobacco water for the last named pest, and syringe the plants infested with red spider as often as possible with clear water. Red spider cannot thrive if drenched with water occasionally.

FLOWER GARDEN.—Dutch and spring flowering bulbs should be planted before the end of October. No mulching is required for these until November, or perhaps later, according to the severity of the weather.

It often happens that the first frosts of autumn barely nips the foliage of dahlias, cannas, gladioli, or even the more tender Caladium esculentum, not sufficient to warrant the plant lover in rooting them up, whilst the second visitation of frost is sometimes severe enough to freeze unprotected roots and bulbs of these plants in the ground. It is a good plan to place a mulch of some kind around the roots of these and similar plants to ward off this second attack of frost, so that the tubers and bulbs may not be damaged. By doing this it will give them time to mature and ripen in a more natural way than if taken from the ground immediately after the first frost. They must not, however, be risked too long in the open ground, but must be dug up and removed to a shed, or out-building, where they will be safe from frost, and allowed to dry before being stowed away for the winter.

All flower beds or borders, as soon as vacant, should be given a coating of short manure and the ground dug up deeply, the surface being left as rough as possible. If the ground is of a stiff, clayey nature, throw it into ridges for the frosts of winter to pulverize and sweeten. Make the ridges so that the furrows between them will drain off all surface water quickly. By ridging up ground in the fall much time and labor can be saved in the spring, and better results attained the following season.

FRUIT AND VEGETABLE GARDEN.—Picking and storing fruit will be the principal operation in the fruit garden during October. Many of the early varieties of pears and apples will already have been picked and stowed away. Almost all varieties of pears are better picked before they are ripe, and ripen best packed and covered up closely in boxes and stored in a warm shed or out-building. If placed in the cellar to ripen the flavor and color of the fruit is greatly impaired, and if laid out on shelves or benches exposed to the air the fruit often

shrivels up badly before ripening. Late pears, such as Winter Nelis, Easter Beurre, and Josephine d'Malines, will be best left hanging on the trees until there is danger from frosts. Apples will keep best if left in open barrels or laid carefully in heaps in a shed or out-building. They can be kept in this way for a week or two, when it is best to cover them up to prevent over drying or perhaps shrivelling. Apples should not be put into the cellar until severe frosts necessitate their removal to safer quarters than a shed or out-building provides for. Old canes of raspberries and young useless growth should be cut out. If these are laid by they will come in useful to place on winter spinach beds later in the season. Fine brush wood is a great protection to spinach in winter. Manure, and fork lightly over, the ground amongst small fruit trees and bushes. A mulch of long manure afterwards will benefit them considerably.

Storing for winter will have to be attended to in the vegetable garden. Roots of all kinds can be pulled and covered up in temporary pits in the garden for a week or two. This will allow the roots to dry before being taken into the cellar. They will keep much better if treated in this way than if pulled and placed in the cellar or root house direct from the garden. Store them if possible on a nice day, so as to ensure their being placed in the cellar quite dry. Roots keep best during the winter covered with dry earth or sand, unless the cellar is very damp and close. A few artichokes, salsify and parsnips may be left

in the ground all the winter. They will eat much nicer in the spring than those stored in the cellar. Celery will require to be moulded or earthed up, or protected in some temporary way from severe frosts, until later, when it can be placed in earth or sand in the cellar. A narrow trench dug out in a high and dry part of the garden, where the surface water will not get into it, will keep celery splendidly during the winter. The trench should be only the width of a spade, and deep enough so that the tops of the celery are just below the ridge of earth thrown out. Place the celery carefully in the trench in an upright position, use plenty of the earth thrown out around and about the celery, packing it carefully with the hands. Cover a few boards over to keep out the rain. A very slight covering of leaves or long manure placed over these later on will be found sufficient to keep out frost, unless very severe. There is more danger of celery rotting in trenches from being too closely packed than there is from its being frozen. Cabbage and cauliflower are best covered up or pitted out of doors, as they are considered to be a source of danger and disease to the inmates of a dwelling house if kept in the cellar during winter.

Manure and dig up roughly all ground as soon as the crops are taken off. Throwing the ground into ridges about 3 feet apart will be found to be of great benefit to heavy, clayey soils.

HORTUS.

Hamilton.

THE HANRAHAN SYSTEM of cold storage has been adopted by the Minister of Agriculture for Ontario for the forwarding of tender fruits to Great Britain. One car load of early apples and pears left Grimsby for Manchester on the 25th of August, and

several carloads of pears, peaches, tomatoes, etc., followed on the 15th of September. All these consignments go forward to Manchester by the Manchester liners. A cablegram reports that the first car load arrived in perfect condition.

SWORD FERNS.

These Ferns are suitable for window culture, doing well in the dry air of the house. Three species are in common cultivation;



Nephrolepis exaltata, *N E Bostoniensis* and *N cordata compacta*.

These are the common sword ferns, the Boston fern and the latter, a dwarf variety with upright, narrow leaves, which is much used in fern pans for table decoration. All do well in a compost of loam, leaf mold and sand. They should

never become pot-bound and require an immense amount of water. All are useful for hanging baskets, wire baskets lined with growing moss being

used, filled in with soil in which to set the plants. New shoots start out through the moss and soon the basket is hidden. The common variety has leaves from 2 to 4 feet long, while the Boston fern grows to a much greater length. The plants increase rapidly, the new ones growing from the tendrils which run out from the old root; when they remain on top of the soil they should be layered to hasten growth. Some sorts have tubers which many suppose can be used to propagate new plants, but they are simply feeders or reservoirs of moisture for the use of the plant. My neighbor removed all she saw when repotting a new fern, planning to raise many new plants; she not only failed in her purpose; but killed the old plant. Thrips and scale are the only enemies of these plants and they can be cured by smoking for the former and washing the stems for the latter.—*Park's Floral Magazine*.

HIGH FEEDING FOR PLANTS.

INTERESTING experiments have been carried on in plant feeding by G. M. Sherman, of Hampden Co., Mass. His plan in brief is to supply liquid fertilizers by means of a porous jar buried a foot or more beneath the surface and filled from time to time through a tube projecting above the ground.

The roots of the plant or tree collect around the porous jar and absorb the fertilizers. The illustration shows a small apparatus in operation. Patent has been applied for. Mr. Sherman's experiments have been mostly confined to rose bushes, which in many cases appear to have made enormous growth, shoots extending several inches per day in some cases. The inventor expects the principle to prove of great value in cultivation of all kinds of fruit and shrubs and

will attempt to have the theory thoroughly tested at the state experiment station.



FIG. 1928. APPARATUS TO FORCE RAPID GROWTH.



FIG. 1929.

The above photo shows a Crimson Rambler rose, climbing up the residence of Mr. W. R. Wright, Picton, Ont. The rose was a premium to Mr. Wright from the Picton Horticultural Society several years ago, and has been very much admired, the profusion of bloom being so great, that one could hardly count the endless number of roses.

NARCISSUS.—Of all bulbous plants these are most healthful and varied in form and color. They always bloom if given anything like proper attention. In my window now are three sorts. Paper-white, fresh and dainty, comes first. On the pots I find written "Planted Sept. 27th." Many of them bloomed at Thanksgiving, full and sweet. The hyacinths planted the same day are only little green buds above the soil. Some of

the narcissus clusters have fifteen waxen cups, and each bulb yields two or three clusters. Another narcissus, blooming a little later on is larger and quite as sweet, and pure waxy white. The Chinese lilies put in water on the day the narcissus were planted, are in full bloom for Christmas, a creamy white with a deep, large golden cup, and short, roundish petals.

Planted outside in October the narcissus blooms in early spring, some sorts with the crocus; others with the first rose buds. The bright yellow ones are lovely, there are white double ones that look like Cape jasmynes. The varieties are almost countless. —*Park's Floral Guide.*

RUDBECKIA, GOLDEN GLOW.—Talk not to me of the glory of chrysanthemums produced by care, for no golden chrysanthemum was ever more beautiful than the double puffy Golden Glow. The root which was planted last year was given a stake to which the stalks were tied. Lo, along came the west wind and snapped off the stalks and we had no blossoms. The roots were not covered during the winter, one which was so severe that everything was killed but Golden Glow. It sent up dozens of stalks in the spring and made a rapid growth. Today it is eight feet high with one hundred buds and blossoms. We did not stake it this year and the long, wiry stems, crowned with a ball of concentrated essence of 'sunshine, toss and nod most gracefully. Each flower is borne on a stem by itself which makes it very satisfactory for cutting. The foliage is scant and does not crowd up the flower stem. The buds are not pretty and give no promise of the great beauty of the full blown flower. For a most satisfactory and highly ornamental hardy perennial, one cannot too highly recommend Golden Glow. —*Park's Floral Guide.*



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

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ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

FRUIT INSPECTION.—In answer to our inquiry, the Minister of Agriculture writes under date of August 20, 1900, that neither the Fruit Inspection Act, nor the Barrel Act, have yet become law.

THE EARLY MICHIGAN PEACH was shipped at Maplehurst August 22nd. It is a very pretty high colored variety, of the early clingstone white flesh class, rather small, and not a good keeper. Firm samples laid up on a shelf for two days began to rot.

ROSS SEEDLING PLUM.—On the 18th of August a box containing about a dozen samples of this plum was sent the writer to Grimsby by Mrs. J. T. Ross, 51 Main street east, Hamilton. The plums were very fine, about equal to the Bradshaw in appearance, of which they are claimed to be a seedling. We know of no plum of that

season to really compete with it, unless it be the Abundance, which is of so different a character that it can hardly be compared. The quality, however, is inferior to that of Bradshaw.

THE STANDARD APPLE BARREL.—The barrel sanctioned last year contained 103 imperial quarts, or 107 quarts. The new standard barrel, asked for by our association, holds 96.51 imperial quarts, dry measure, or 100 quarts. The staves are $1\frac{1}{2}$ inches shorter, which is the principal difference.

SMITH'S SEEDLING PEACH, reported in our report for 1899, p. 50, seems to commend itself more and more. Mr. R. T. Smith brought a basket of the peach to our office on the 24th of August. All the samples were equally fine, measuring uniformly about $2\frac{1}{2}$ inches in diameter, round, with

red cheek, white flesh, freestone, and of excellent quality. We know of no peach of its season to compare with it. The skin separates from the flesh very easily, so that it may easily be peeled by the hand without using a knife.

AMERICA.—Samples of this new Japan plum of Burbank's were sent us August 21st by A. M. Smith, St. Catharines. This plum is a bright carmine color, nearly as large as Burbank, and of superior quality. It should take well in this market. Japan plums are much hardier than most people suppose, and may be grown wherever the English varieties thrive.

THE INCREASE OF CANADA'S EXPORT TRADE with the United Kingdom is certainly a very important subject with Canadian producers of food products, and we are glad to receive a pamphlet from H. G. McMicken, London, England, on the subject. A company is being organized to work for the extension of this trade on safe lines, to be known as The Canadian Industries and Food Supply Association.

A MEMORIAL NOTE may be permitted us just here, if we record the passing away on the 16th ult. of another of the few remaining constituent members of our Association, in the person of Mr. Chas. E. Woolverton, alluded to above, at the age of 80. One who sat about the table in the Board of Trade room in Hamilton in the year 1860, along with D. W. Beadle, A. M. Smith, Judge Logie, Charles Arnold and others, and who has been one of those unassuming yet powerful factors in the advancement of our interests.

THE HEAVY WIND STORM of the 11th and 12th ult. committed terrific havoc with the fruit orchards of Ontario, and indeed those of a large part of the apple belt of our

Continent. Immense quantities of pears and apples were blown down, and at first we feared most serious losses. But on examination we find that the larger part of the fruit blown down is wormy and defective, and would have been unfit for shipment. The remaining fruit will mature better for the thinning, and there will be less poor stuff to handle and throw away.

SPECIAL EXPORT TRADE.—The Hon. John Dryden is taking an especial interest in the development of the Ontario fruit trade. Hitherto the business has been hindered by the miserable cold storage accommodations both on rail and steamboat, but Mr. Dryden has prepared a special automatic cold storage car for use on the Grand Trunk, and special cold storage compartment of the same kind on board the steamers. The line chosen for the first shipments is that to Manchester, and should the results prove equal to expectations, other lines will be fitted up.

The Department has already sent forward two carloads, and a third will follow soon. We shall gladly make public the results when fully known.

THE INDUSTRIAL FAIR was well patronized by the fruit men, and thanks to the energetic representative of our Association, Mr. W. E. Wellington, the fruit building becomes each year increasingly attractive to visitors.

Our own experimental exhibit was superintended by Mr. W. M. Orr, of Fruitland, a gentleman well fitted by his experience at the World's Columbian Exhibition, for such work. The following extract from the Canada Farmers' Sun may be of general interest :

During our visit to the fruit building an effort was made to secure information as to the probable price of winter apples, but the success attending this effort was not particularly marked.

W. H. Orr, of Fruitland, said that he had heard 60 cents a barrel, the growers to do the picking, spoken of. One man who had 2,000

barrels to sell had offered to take 75 cents. In grapes for domestic use he counted on from \$20 to \$30 a ton as the ruling price. Speaking of the show, Mr. Orr said: "This show is two weeks too early for all but the very earliest fruit. It is impossible to get color so early in the season. If the show could be even ten days later it would add very much to the size and appearance of the fruit exhibit."

In the Fruit Department of the Fair were shown boxes with early apples and pears done up in wax paper for shipment to the Old Country. "If we can but get the price that we got last year," said Mr. Orr, "it will pay us to take even this trouble in preparing fruit for shipment. We can hardly expect, however, to get a very large market unless means be devised for shipping at less cost."

One of the best features in the fruit department was the display made by the different Ontario experimental fruit stations. This display occupied one large table and the fruit was of splendid quality. One section was devoted to exhibiting crabs and Duchess apples grown on St. Joseph's Island. "That exhibition," said Mr. Orr, "was quite a surprise to us. A great many people had no idea that such good fruit could be grown so far north."

There was found standing quietly in a corner of the building given up to fruit one whose name is but seldom heard by the public. At the same time few statesmen have done more towards bringing Canada to the stage of development which has been reached. This was A. M. Smith, of St. Catharines. Some 38 years ago that gentleman, acting with the father of Linus Woolverton, set out the first peach orchard in what is now the Niagara fruit district. This orchard was established at Grimsby on the farm occupied then, as it is occupied now, by the Woolverton family.

"Five or six hundred trees were set out at that time," said Mr. Smith. "People in the neighborhood said we were crazy for doing it; that we would not know what to do with the fruit when produced. We also set out in a nursery plantation some five or six thousand young peach trees, and it was again said we were wasting our money—that, if all these young trees grew we would be unable to find a market for them. But I had faith in the venture. Before starting to grow peach fruit in Canada I had imported peaches from Lockport, N. Y., and sold them in Canadian towns. I felt sure if a market could be found for American fruit one could be found for Canadian fruit. When our trees began bearing we induced the express company to open an office at Grimsby, and we commenced shipping our fruit to Hamilton, Galt, London and Guelph, and other towns. From our first orchard we sold some peaches up to \$4 per bushel, while a common price was from \$1 to \$3. When we netted \$300 from one acre of peaches in a single year the movement began to spread with marvelous rapidity. It spread even to Winona, where it was supposed the soil was such that would not grow peaches, but it was soon found out that this land would grow the trees as well as that about Grimsby. The late Mr. Woolverton and myself

also established a nursery for the propagation of grape vines. W. H. Orr, of Fruitland, set out what was perhaps the first vineyard for the production of grapes in a commercial way. He sold his first grapes in Hamilton at 8, 9 and 10 cents per pound."

"I only wish," put in Mr. Orr, who was standing alongside, "that we could get the same prices now. We made more from one acre then than we can from ten acres to-day."

"Of the extent of the Niagara fruit industry," Mr. Smith went on, "all the world knows more or less to-day. At St. Catharines, where I helped start the first canning factory, there are five factories in existence to-day. From one station in the Niagara fruit district, E. D. Smith is now shipping three or four carloads of fresh fruit daily, while a neighbor of his is shipping two or three cars. Taking the whole Niagara district, at a conservative estimate, the value of the fruit crop in one year will amount to \$2,000,000. All this has been accomplished within one generation."

APPLES IN BARRELS.—The following instructions for grading and packing apples were sent us by Mr. Ernest Heaton, Toronto:

1. Take barrels to the orchard, hand pick the apples, and fill the barrels from the baskets as they are brought from the ladders, putting the baskets down into the barrels, and turning them over with great care. Apples should not be picked on a hot day, nor if the apples are wet. Be particular not to pack any apples which have dropped from the trees. Haul to the barn immediately, and store the barrels on a dirt floor, if possible, as it is cooler and damper and better for the apples. Barrels should not be left in the orchard exposed to the hot sun and wet weather.

2. When you are ready for packing, take a table ten feet long by three feet wide, with side boards about eight inches high. Line the table with carpet or canvas, to prevent bruising the apples. Pour out three barrels on the table at a time. With two men to sort, use six baskets. Make at least three grades of apples, putting each grade into a separate basket.

3. First grade apples must be hand picked from the tree, of good color and of normal

shape and form, and at the time of picking free from the action of worms, defacement of surface and breaking of skin. The Ben Davis, Baldwin, Greenings and other varieties kindred in size, must not be less than two and one-half inches in diameter. The Russet, Jonathan, Spitz and other varieties kindred in size, must not be less than two and one-quarter inches in diameter.

Second grade apples must be hand picked from the tree and not smaller than two and one-quarter inches in diameter. The skin must not be broken or the apple bruised. This grade must be faced and packed with as much care as number one grade.

Third grade apples should never be packed for export.

4. To prepare the barrels. Tighten all hoops, nail them well, and clinch all nails on barrels. Mark on the end of the barrel with a clear stencil, (1) Shipper's name. (2) The shipper's brand. (3) Grade of fruit. (4) Variety of fruit.

5. The barrel should be placed on a solid plank, and continually racked as each basket of apples is placed in the barrel. A piece of timber should be used for this purpose about two inches thick, and of such circumference as will fit nicely in the barrel without leaving too much space; it should be well padded to prevent cutting or bruising the apples.

6. In filling the barrels with different grades of apples, pick out well colored apples of normal shape and standard size, cut off all stems and set or face the heads of the barrel with them, leaving the very largest apples of each grade for the middle of the barrel, so that if a buyer turns out a barrel he will find the best apples in the centre.

7. Fill the barrels so full that the apples are level with the top of the staves, using the same grade of apples for tailing as are used for facing the barrel.

8. Press the apples first with the padded block, so tight that not an apple will move

in the barrel, and then put in the head, nail hoops and securely fasten the heads with strips or liners.

9. Apple barrels when being hauled to the station should never be loaded on end, for in all cases it is bound to slacken the barrels.

SUMMER PLANTED STRAWBERRIES.—Just as soon as these first runners are nicely rooted, which hereabouts is in July, the new bed may be made. Lift the plants with some little ball of earth attached and set them in the new bed, and with a good watering afterwards the plants will take care of themselves. But when plants are purchased and have no soil with them, much more care in watering and shading is necessary, especially when the planting is in the heat of summer. I do not think much is gained in setting out runners without soil attached at any time but early spring. The chief object of summer or fall planting is to gain a bed for fruiting the next spring, and this cannot be done unless the plants make a good growth after they are planted. Plants removed with a ball of earth attached, or those grown in pots, will produce a fair crop the next season. To get these plants as vigorous as possible is the object desired.

A bed of plants set out in summer and encouraged to grow nicely will give a fair crop of large berries, perhaps not as full a crop as an older bed, but still a very satisfactory one. It may be let alone for another season, but strawberry beds should not be permitted to stand longer than two years. Indeed when plants are set in spring it is quite common to let them bear but the one crop, in the spring following, thus setting a new bed annually. Better results in the way of profits are obtained under this system than under the old one of permitting the beds to remain for several years.—*Gardening.*

QUESTION DRAWER.

A Seedling Peach.

1182. SIR,—I send you two samples of a fine seedling peach which has fruited this year for the first time. The tree is vigorous, hardy, and productive.

Jarvis, Ont.

T. H. L.

This is a magnificent yellow fleshed peach, equal to the Early Crawford, which it much resembles in appearance and quality, only that it is a clearer red.

Seedling Plums.

1183. SIR,—I am sending you two samples of plums grown from some suckers given me by a lady in Ottawa, which have borne heavily the last three years. Would you please give me the name of them or name them for me if they are not a known variety, so that I may exhibit them.

Ottawa.

W. H.

Few people except nurserymen seem to know that named varieties of fruits are propagated by either budding or grafting on some seedling stock, and that suckers from the latter will be of the nature of the stock and not of the graft.

These Plums are Seedlings, too small to be of commercial value at this season (Sept. 12th), and not worth adding to the list of named varieties.

A Cedar Hedge.

1184. SIR,—What is the proper time to plant a cedar hedge, and what is the best way of putting it in, and what size plants to use? The above will much oblige yours truly,

Seaforth.

BEATTIE BROS.

Evergreen may be removed at almost any season of the year, providing the removal is not followed by excessive drouth. The sap of these trees is gummy, and if once dried the tree will not recover. May or June is usually counted a good time, because the rains which follow settle the ground, and the trees will become established before the summer drouth.

We would advise small in preference to large size trees; for if a cedar or spruce tree

once becomes stunted, it rarely ever recovers itself. We would advise buying cedars (*arbor vitae*) that were about two feet in height.

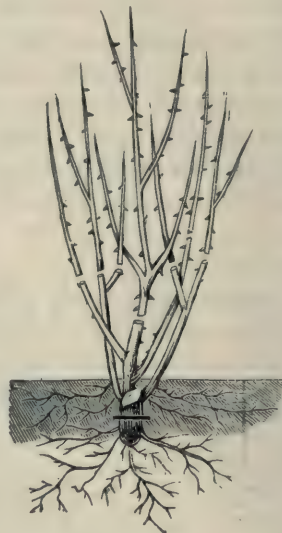


FIG. 1930.

Pruning Roses.

1185. SIR,—Kindly tell me how to winter and prune my outdoor roses. They have been set out two years, and I have tried bending the branches to the ground and covering them with straw for protection, but many of the branches are now becoming too large to be bent down, and those which were bent over have never fully recovered their upright form. How can I protect them this winter without making them unsightly? Should they be pruned, and if so, in what way? Many of the branches appear to be quite dead.

Elgin.

J. R. DARGAVEL.

H. P. Roses, which we presume are referred to by our correspondent, need to be well pruned back every year in order to encourage the growth of an abundance of young wood, for bloom is produced upon the young growth. They should be pruned first in the spring time when the growth is nicely started. We give an illustration showing about how this work should be done. If two or three good buds are left upon each branch they will be all that are

required. After the blooming season in June, it is well to cut back the summer growth again in order to encourage late growth of wood and thus produce flowers later in the season. If the rose bushes are thus kept freely cut back our correspondent will not have much difficulty in protecting them during the winter. He can easily pile straw or leaves about them to protect them from the cold, if such protection is necessary. In the Southern parts of our Province the H. P. Roses are perfectly hardy without winter protection.

Fruit Markets.

1186. SIR,—How is the grape crop with you? I hear that in Essex it is poor, but I have never had better prospects than this year. Is there any paper published containing reliable fruit markets, with hints as to the prospective prices? The Toronto papers do not give these in much detail. Of course you in the fruit centers know what the fruit is worth, but people like myself, living away from the fruit centers, have to do a good deal of guess work. I would like some advice as to reliable consignees for my fruit.

Listowel, Ont.

A. J. COLLINS.

The prospect for grapes is fairly good in the grape growing sections of Ontario,

and so far this season prices have been quite satisfactory, ranging from 1½c. to 2½c. per lb., and even considerably higher at the beginning of the season. We would refer our correspondent to the Montreal "Trade Bulletin" as a very useful paper on the fruit markets of that city, which is one of the best centers for large consignments. In this paper there will also be found the names of several commission merchants, but we would not presume to take it upon ourselves to advise our correspondent as to which of them he ought to choose.

Grimes' Golden.

1187. SIR,—Why did you give up growing Grime's Golden apple in Ontario? I have a lot that I intend planting in spring. Is there anything wrong with it?

Vernon, B. C.

R. T. F.

The Grimes' Golden is a good apple for the home garden, but lacks in two important points to be worthy of a place in the commercial orchard; (1) it is too small, which of late years is more and more considered by buyers, and (2) it lacks the color which attracts foreign buyers to our apples.

Open Letters.

Spirea "Anthony Waterer."

SIR,—In the description given by Prof. McCoun, he states "Origin, Europe; height 1 foot." The height given by him will mislead many, who do not know the shrub when planting it out, because it will grow to the height of six feet and over. I have one I planted in the spring of 1897. It was about 15 inches when I planted it. It is now five feet high and about ten feet in circumference. Ellwanger & Barry say "height from 5 to 8 feet." It is a lovely shrub and should be in every garden. Give it room and it then forms a perfect bush. As soon as the first blossoms are over they should be cut off with a pair of shears; if left on they give the bush a ragged appearance. It will then flower more or less till the end of October. Plant it where it is shaded during mid-day, because if exposed to the sun all day the flowers quickly lose their bright color.

South London.

CHAS. JAS. FOX.

Floriculture at Hamilton.

SIR,—In your last issue Mr. R. Cameron, of Niagara Falls, asks: "Is the Love for Flowers Diminishing in Hamilton." In reply I will answer. No, sir, and I am perfectly satisfied that Mr. Cameron would say "No sir," if he would see our market during the week or on a Saturday. Of course, no one could help but notice the slim attendance at our recent flower show, but the reason is simply this, we have a flower show in our market three times every week, and the writer knows hundreds who visit the market for nothing else but to see the beautiful display of some of the best flowers that are grown. And of course, it is but natural to think that no one will pay to see a flower show when a most beautiful display is made on our market days. When our nurseries vie with each other, who can make the best display. The directors of the Hamilton Horticultural Society might take the hint and use the money now expended for flower shows for some other purpose. Flower

shows never will be a success in Hamilton, for the reasons already stated. The professional nurseryman will not go to the trouble of making an exhibit at any show where an admission fee is charged, and he himself does not get any cash benefits in prizes. The sales do not pay him for his trouble, and he knows where to find the buying public—in the market—that is the place where he gets his dimes. The Hamilton Horticultural Society is doing a good educational work in scientific floriculture, it is spreading its good work far and wide, long may it continue to do so, but no organization can make a flower show pay in Hamilton, when (as I stated above), there is a free and splendid show three times a week which draws out the best as well as the worst classes to see it.

23 Simcoe West.

C. HIRSCHMILLER.

early sandy soil. You can see from this that the difference could not be on account of situation or climate, so what can it be?

I am of the opinion that the peach varieties are degenerating, or running into one another from the want of proper care in selecting seeds for stocks, and buds to be used on such stocks.

It is said that the Crawford peach when first introduced in England, were of a dry mealy texture. They are certainly the reverse to-day. They are rather soft to ship, particularly the Early Crawford. The later variety is much more solid and coarser in the grain or flesh.

We hope to hear from some others on this subject.

RODERICK CAMERON,
Gardener Q. V. N. Falls Park.

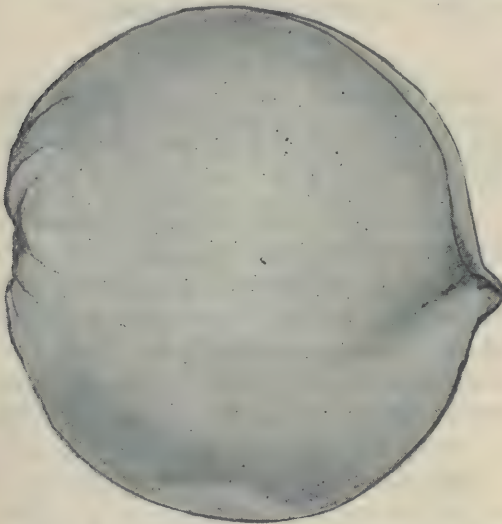


FIG. 1931. EARLY CRAWFORD.

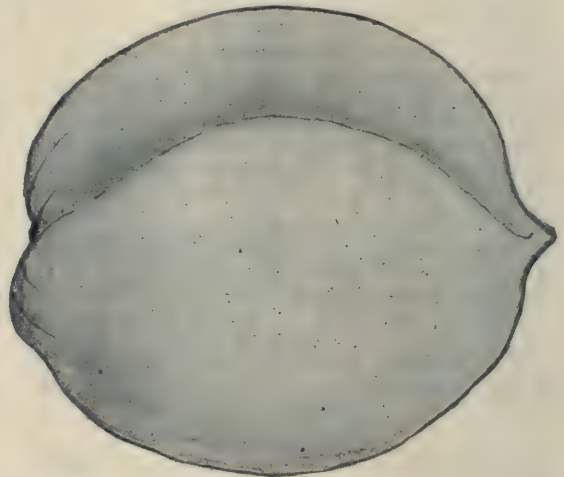


FIG. 1932. LATE CRAWFORD.

Wrongly Named Varieties.

SIR,—Are the varieties of our peaches as well known to the public as they ought to be? It would seem not, from the fruit that we see getting first prizes. We will only mention one instance, the fruit shown at the Toronto Industrial Exhibition for Late Crawfords and got first prize, the fruit being then ripe on the 4th of September. Can it be possible that the fruit could be Late Crawfords, when in the meantime the Early Crawfords were only commencing to ripen. I was led into a discussion over the plates there exhibited of Late Crawfords, with judges and prominent fruit growers, and I would like to see the case thrashed out, and to begin with, I will start the ball rolling by sending you, Mr. Editor, two cuts, one the Early Crawford, the other the Late Crawford. I also send you specimens of the fruit, which I will vouch for being correctly named, and the fruit was picked from trees about thirty years planted. The two varieties are growing side by side and not over one hundred yards back from the Niagara River, and on rich

To Kill Aphis.

Do you not use quassia chips along with whale oil soap? I see no mention of its being used in the east. Here we use $1\frac{1}{2}$ lbs. of quassia and $1\frac{1}{2}$ lbs. soap to 30 gals. water for aphis. I find that 1 lb. of soap alone to 15 gals. water is effective for aphis. Gillett's lye is a splendid wash before buds start to swell, to kill the aphis eggs and clean the bark, but is a little too expensive. One tablespoonful lye, 1 lb. soap, 15 gals. water for black cherry aphis.

Vernon, B. C.

R. T. F.

The Clyde Strawberry.

DEAR SIR,—I noticed in a recent issue of your very valuable paper, that you had had complaints from a number of customers about the Clyde Strawberry being soft.

Surely such parties must not have the true Clyde. I fruited 67 kinds this year, including all the leading kinds, and after three years thorough trial am prepared to say I never grew a firmer berry than

the Clyde. My best commercial berries this year were Bederwood and Warfield for early, followed in season by Clyde, Crescent, Haverland, Wm. Belt, Enormous, Ten. Prolific and Greenville. The last named is one of my family. I have added a lot of new varieties this year, and hope to be able to give you a detailed report of their behavior next year.

Now to return to the Clyde Strawberry. If it were a good plant maker and I were restricted to one variety, I should plant it alone. But with me it has been a poor plant maker and the first two years it was very good color, but this year it was all that could be wished.—Respectfully yours,

Renfrew, Ont.

W. J. KERR.

Our Affiliated Societies.

WOODSTOCK.—The fourth annual exhibition of the Woodstock Horticultural Society was auspiciously opened at the Graham street ring last night, August 22. Although the attendance was not as large as the society expected, the prospects are better for a good crowd to-night.

The dingy old rink looked anything but itself, thanks to the efforts of the decorating committee, composed of Miss Parker and Mrs. James Hay. Bunting of various colors, Chinese lanterns and a profusion of flags and curtains tastily arranged gave the place a decidedly pretty appearance, and the general effect was a source of much admiration. The exhibits, too, were far superior to those of other years, and the society is to be congratulated on its showing in this respect. Every branch of horticulture was fully and creditably represented. The musical programme was also a most important and enjoyable feature of the evening. The Imperial Quartette rendered three enjoyable selections, and Madame Hausch's popular stringed quartette was also heard to good advantage. Mrs. Balmer Watt sang the Gypsy Love Song from "The Fortune Teller," by request. Mrs. Watt's number was very much appreciated. Miss Clara Farrell sang a pretty solo and was obliged to respond to a hearty encore. The Misses Holmes and Nesbitt gave well rendered piano solos.

Mayor Scarff's splendid floral collection, consisting of one hundred and seventy-eight pots of flowers of various kinds, was greatly admired, and nobody disputed the fact that the Mayor's was the best exhibit of its kind at the show.

Charles Reid's and J. H. Callander's collections of cacti were the centre of much attention, and admirers of these plants found many new and strange varieties.

D. W. Karn's exhibit of house and foliage plants occupied a prominent position and compared very favorably with those of any other exhibitor.

T. H. Parker showed a wealth of beautiful hardy house plants and cut flowers.—*Sentinel Review*.

PICTON HORTICULTURAL SOCIETY.—The second annual flower show and exhibition of plants was held at the Crystal Palace on Friday evening, the 31st August, and was kept open on Saturday afternoon and evening, and also on Monday afternoon during the Firemen's games and sports.

On Friday evening the attendance was fairly good, there being about 275 present to enjoy the

flowers and listen to the concert by the band; on the other occasion the patronage was very small, and on the whole the flowers were not appreciated as heartily as last year.

The contributions of Mr. C. S. Wilson and Messrs. J. Terrill & Son added greatly to the beauty and success of the exhibition. Mr. W. P. Despard's palm was greatly admired, and the Norfolk pines and palms in Mr. Geo. O. Alcorn's collection were a very valuable addition; also Mrs. Stortz's magnificent hydrangea, and Mr. Geo. Williams' fuschia. The collection of plants and flowers from Messrs. J. Roland Brown, J. P. Blakely, T. Bog, J. C. North, Geo. W. McMullen and a number of others were very beautiful.

The tropical plants of Mr. Walter T. Ross were as usual of much interest. His fig trees were well laden with fruit, and the Papaya tree, or Papaw, was looked upon with much curiosity. It is a common practice in the tropics to cut meat in slices and wrap it in the bruised leaves of this tree for half an hour or so, which has the effect of making tough meat tender.

Great credit is due to the president, Mr. J. Roland Brown, and Mrs. Brown, for their untiring efforts, and they were ably assisted by others.

We understand the receipts were not as large as last year, but the exhibition in itself was a great success, even finer than the previous one, and a great many strangers who attended expressed their surprise that a town the size of Picton could make such a varied and fine exhibition of well grown plants and flowers.—*The Picton Gazette*.

GUELPH.—God made the flowers, and that He made them for man's delight and profit need only to be proved by a visit to the City on Sept. 12th. The place is a reasonably beautiful hall, as city halls go, but last night the corridors and auditorium were transformed, and one walked about in a perfect bower of loveliness. The flowers and plants, placed to best advantage to show their beauties by admiring owners, had worked the transformation, and when the orchestra played sweet music, and the big crowd came and admired the directors and members of the Horticultural Society felt well repaid for their efforts and realized that the show was a big success.

The Guelph Horticultural Society, as at present constituted, is an association of about a year's standing, and its strength of membership already attained was shown by last night's display. Most

of the members are amateurs, and their gardening efforts are confined to the beautifying of home surroundings. But they are nothing if not enthusiastic, and when this display was proposed about a month ago, everyone concerned agreed to do all they could to make it a success in the way of contributions. The result was an almost overwhelming assortment of flowers and plants, in quantity sufficient to fill all the tables provided, fill all the corners available, bank up the stage, and then overflow into the old hall.

The greater portion of this display was made by amateurs, and to them much credit is due. The finishing touches and crowning features were provided by the professional florists, whose display was worthy of any metropolitan centre. The display tables, covered with white paper and draped with muslin and green foliage, formed a V from the stage, with a centre row of floor plants, and side tables along the walls. This arrangement proved very effective. Thain's orchestra was on the stage, behind a bank of flowers and plants which included, as one lady fittingly put it last evening, "most everything lovely."

Of the professional displays, the banking effect on the centre floor by Capt. Mann is worthy of note. This is the latest decorative effect, and it certainly makes the best and most of the plants used. Mr. Mann also shows a pretty supper table design. Mr. Jas. Gilchrist shows a fine collection of ferns as his principal feature, making special showing of the new Sprengie fern: the latest decorative green. This is handsomely contained in a number of rustic hanging baskets in the windows, and gave a beautiful drooping effect. Mr. Gilchrist also shows some beautiful floral designs. Next his display is a table of rare cannas sent from Toronto by Mr. Archibald Gilchrist. The display was very favorably commented on.

Of the many meritorious amateur exhibits it would be invidious to make distinction. They

were so numerous, and withal so creditable, that it would be difficult indeed to make an order of merit. Immediately on entering the building one was bound to exclaim in admiration at the sight of the big rubber plant, fully twelve feet in height, the property of Mr. J. W. Lyon. This gentleman showed a large assortment of beautiful things. One of the happiest men in the place, happy because he loves the flowers, was Mr. Thos. Davies, Guelph's veteran amateur florist, who has many lovely plants, the showing of which he is justly proud.

Some of the special features were: "The aster table," as fine a collection as one could wish to see; "the yellow table," a bewildering phalanx of golden glow, dwarf sunflowers and coreopsis, eloquent of autumn, and the fine display of flowers and foliage begonias. Then one might mention the queen white nicotine flowers, blooming only at night; the generous bunches of sweet peas, redolent with fragrance; the fuchias, the every day geraniums, the fig trees, the pousettia, and the Japanese lilies, all of them lovely, while towering high over all rises the big "dracena indivisa," the very lord of palms, with the "sea maze" and "fish-tail" palms to keep it company. One scarce need think of other decoration, but in this regard the good taste shown by the management is commendable. Flags give a patriotic touch, and evergreens complete the simple embellishment to the plants themselves, and surely no more is necessary.

The exhibition is free, and the exhibits and work contributed by the members has been entirely voluntary. As an educative feature, this display must be commended, and everyone, whether interested in flowers or no, should pay a visit to the City Hall this afternoon or evening, and thus encourage the management in their worthy efforts.—*Guelph Daily Mercury*.

BOOKS FOR FRUIT GROWERS

BAILEY—Annals of Horticulture.....	\$1 00	GREINER—How to Make the Garden Pay..	2 00
Field Notes on Apple Culture.....	75	New Onion Culture.....	50
The Nursery Book.....	1 00	HUNN & BAILEY—Amateur's Practical Gar-	
The Survival of the Unlike.....	2 00	den Book.....	2 00
The Forcing Book.....	1 00	MAYNARD—Landscape Gardening.....	1 50
Horticulturist's Rule Book.....	75	MITCHELL—Tomato Culture.....	15
Garden Making.....	1 00	NICHOLSON—Dictionary of Gardening, IV.	
Plant Breeding.....	1 00	Vols.....	20 00
Pruning Book.....	1 50	REXFORD—Flowers.....	50
Principles of Fruit Growing.....	1 25	SAUNDERS—Insects Injurious to Fruits.....	2 00
CANADIAN HORTICULTURIST—Vol. I., II.,		TAFT—Greenhouse Management.....	1 50
III. or IV., each.....	80	VOORHEES—Fertilizers.....	1 00
Vol. VII., VIII. or XI., each.....	1 00	WALLACE—Letters to a Farm Boy.....	1 00
Vol. XIII., XV., XVI., XVIII.		WEED—Spraying for Profit.....	50
or XXI., each.....	1 25	WRIGHT—Botany.....	50
CARD—Bush Fruits.....	1 50		
CROZIER—How to Grow Cauliflowers.....	1 50	Orders accompanied by the Cash may be sent to	
GREEN—Vegetable Gardening.....	1 25	the Office of THE CANADIAN HORTICULTURIST.	



FIG. 1933. APPLE PACKING AT MAPLEHURST.

Photo by Miss Brodie.

THE CANADIAN HORTICULTURIST

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No 11

** NOVEMBER **

THE SALE OF OUR FRUITS.

HOW TO AVOID THE GLUT IN APPLES.

AS we have already stated in a previous number, we anticipate a much better apple season than that of 1896. No. 2 stock is yearly becoming less and less salable, but so few have learned the lesson that poor stuff should only be offered by itself, and never mixed with good, that it still helps to glut our markets. Such mixed stock is bound to rule low, both at home and abroad, and will be constantly lower in value, until our growers everywhere have awakened up to new ideas on this subject of fruit packing.

A few have awakened and have begun to select and grade their fruit properly. They pack them in three grades, $2\frac{1}{2}$, $2\frac{3}{4}$ and 3 inch diameter respectively, each in separate packages, so that a buyer a thousand miles away can buy with perfect confidence from the grade.

The writer sold a carload in 1899 in this way to a person in Leeds. This year the order is doubled, at prices which will warrant the extra care taken. Not only

that, but inquiries have come to hand from Newcastle, London and other points after these same graded apples, which show how rapidly the reputation is spreading abroad of these graded packages. Our method is as follows: We pack the ordinary grade apples in the orchard. The foreman takes out his packing table among the trees, and the gang of pickers empty the fruit upon this table, which is large enough to hold two or three barrels at a time. (See frontispiece.) With the aid of two assistants, he is able to sort the apples as fast as picked, and to pack the ordinary and No. 2 grade in barrels for immediate sale in near markets, throwing out the culls in heaps on the ground to wait until the season is over and then be sold for evaporating or for cider. While the packer is thus engaged, the two assistants are busy selecting out all the perfect apples into boxes to be sent into the packing house. Here the high grade stock is carefully sized and packed. First it is emptied upon the Wartman grader and sized. No apple is counted No. 1 which is below $2\frac{1}{2}$ inches in diameter, while those $2\frac{3}{4}$ inches or over

are called A No. 1, and those 3 inches upwards are called X A No. 1, or Extra. These are then wrapped in manilla tissue paper, which can be purchased at about 20 cents a thousand squares, ten inches by ten. The wrapping costs from 2 to 3 cents a bushel. As fast as wrapped they are passed over to the packers, who pack them in bushel boxes. The apples are placed in rows—4 layers deep, 4 wide and 8 long, except the very largest. We use either excelsior or sphagnum for packing material; the latter is a little mussy, otherwise it is excellent; while the excelsior is clean and attractive, but not so good a preservative.

Now these cases of red apples, uniform in size in each package, and of the finest varieties of Canadian apples cannot fail to command a ready sale at the tip top price in any market of the world, and when once known must result in sales f. o. b. in Canada, instead of the present disastrous method of consigning in barrels to auction rooms in Liverpool, London or Glasgow.

OUR PEACHES.

While lower prices have been realized in our Ontario markets for peaches than we had expected, considering the general advance in value of other fruit products, yet peach growing is generally conceded to be one of the most profitable branches of fruit growing. There was, it is true, but little money in the early clingstone varieties, peaches that are of little value for any purpose, and which come in our markets when much better kinds are coming in from the American side; but when the Triumph and the Yellow St. John came along there was a better price and much satisfaction. The first Early Crawford, our finest variety, sold at splendid prices, but this most excellent variety has been overplanted in Ontario, considering its extremely perishable nature, and has caused a glut in the markets, at

the height of Crawford season, that was quite discouraging.

One carload of beautiful golden Crawford from Grimsby, shipped on Saturday, was sacrificed on Monday at 10 cents a basket, a woeful waste. But soon the California shipments ceased, and late Crawford, Elberta, Stevens Rareripe, Crosby, Longhurst, Smock, and other late varieties, when graded to size, brought from 30 cents to 60 cents a basket, and this price is quite satisfactory with an abundant crop.

Our great hope for the future, however, is in the export trade, and we hope this year to pass out of the experimental into the business era. The first peaches we tried to export were the Early Crawford, for we considered it our best peach; but the cold storage system was not sufficiently perfected to carry such a tender variety. Last year we tried a few Elbertas, and this year, under the direction of the Provincial Minister of Agriculture, we forwarded twenty-five Wilson cases of Elberta, and several cases of early and late Crawford, Smock, Stevens, Rareripe, Willett, Centennial and Longhurst. Fine peaches are high priced in England, because they must all be ripened under glass; therefore, should we succeed in this venture the peach trade will enter upon an entirely new era. We have every confidence now in reaching the English market with our fruit in good condition, since Mr. Hanrahan's patent method of refrigeration is being applied by the Ontario Department of Agriculture both to the railway and steamboat storage.

In grading the peach for foreign shipment we have adopted $2\frac{1}{4}$ inches as No. 1, and $2\frac{1}{2}$ as A No. 1; smaller than $2\frac{1}{4}$ inches we sell at home. Indeed, we ought to cut down every tree that grows little peaches, or else so thin the crop that none of the small size would be produced, for they do not pay in any market.

CENTRAL EXPERIMENTAL FARM NOTES.—X.



FIG. 1934. VIEW AT CENTRAL EXPERIMENTAL FARM.

IN many ways this has been one of the most remarkable seasons which has been experienced since the Central Experimental Farm was established. There have been few summers when showers were so frequent and long continued rain so rare. The result is that practically nothing has been injured by rain this year, and everything was benefited by the showers to such an extent that fruit, ornamental trees, shrubs, flowers and lawns never looked better than they did this season. At this date, October 12th, little injury has been done to vegetation by frost. Even such tender things as tomatoes are still growing, as what frosts there were have been very light. Many of the trees, shrubs, and plants are as green and fresh looking as they were in midsummer, and no one would suspect, if they did not know, that this was the middle of October.

The strawberry season was much longer this year than usual, the first picking being made on the 20th of June, and the last on

the 20th of July. Raspberries also were a good crop, and the season for that fruit was prolonged.

American plums did particularly well this season, and a large number of trees were heavily loaded. There is a growing demand and paying prices for these plums on the Ottawa market, and local men are planting more trees every year. Although there have been a large number of varieties sent out by nurserymen, only a few of the very best should be planted. Cheney, Wolf, Hawkeye, New Ulm, and Stoddard, are five of the best varieties yet tested, and they cover the season from the last week of August until near the end of September. Aitkin is a little earlier than Cheney, but not so good in quality.

The crop of apples was good, much better than was anticipated, for it was observed in the spring that the fruit was not setting well. Although the fruit did not set as well as usual, the extra size made up for the smaller number. The trees were

thoroughly sprayed as usual. There was practically no scab, and the codling moth also was not very troublesome.

Of all the varieties of apples grown in the orchard this year the McIntosh Red was the finest to look at. This variety has not proved a shy bearer at the Experimental

Summer—Yellow Transparent, Duchess.
Autumn—Wealthy.

Early Winter—McIntosh Red, and Fameuse in some localities.

Late Winter—Scott's Winter, Gano, Pewaukee, Salome. Milwaukee is a promising new winter apple, being an early and heavy bearer, and of fine appearance. We still require a hardy late-keeping dessert apple of good size and color. It will come in time.

Grapes did not do as well as usual this year. The showery weather caused the vines to make too much growth and also prevented the fruit from ripening well. Furthermore, the fruit did not set well at the outset. However, all the earlier varieties have ripened, and if severe frosts do not come soon many others will ripen also.

There is a very heavy crop of potatoes this year, free from both scab and rot. Among the best yielding varieties are Empire State, American Wonder, Rochester, Rose, and Carman No. 3. The yields per acre, however, of the different sorts have not yet been determined.

It is our intention to spray a considerable number of apple trees this autumn which are affected with the oyster shell bark louse. From experiments conducted here last winter, our conclusions are that two sprayings of lime and water, in the proportion of 2 lbs. of lime to one gallon of water, in the autumn, will remove nearly all the scales which are on the trees. It would appear that the lime loosens the scales, and during the winter they are either washed off by rain or broken off by ice becoming attached to them, the eggs which are underneath them being carried off also and so destroyed before hatching time, which is about the end of May. The lime spray is made by slaking the lime in water (only good lime should be used), stirring the mixture thoroughly and straining it before use. The tree should be thoroughly sprayed from



FIG. 1935. IRIS, JAGQUESIANA (PURPLE).
Grown at C. E. F., Ottawa, Jan. 18th.

Farm. Our trees bear annually, and, although never heavily loaded, produce good crops of fruit of fine size, appearance and quality. After another year's experience the hardy varieties we should recommend are :

top to bottom, and when it becomes dry, the second spraying—which can be done the same day—should be made. The trees should then appear as white as snow. Our

spraying will be done in November, when the buds are thoroughly ripened and dormant.

W. T. MACOUN, Horticulturist.
Central Experimental Farm, Ottawa.



FIG. 1936. IRIS, MRS. H. DARWIN (WHITE).
Grown at C. E. F., Ottawa.

IN France, Germany, Belgium and some other European countries, it is the practice to plant fruit trees along the public roads. The local governments plant the trees and cultivate them as a source of revenue, and

it is said that in Belgium there are 760,000 roadside fruit trees, which in one year produced \$2,000,000 worth of fruit. The walnut, cherry, chestnut, plum and apple are the favorite trees for roadside planting.

MUSHROOMS.

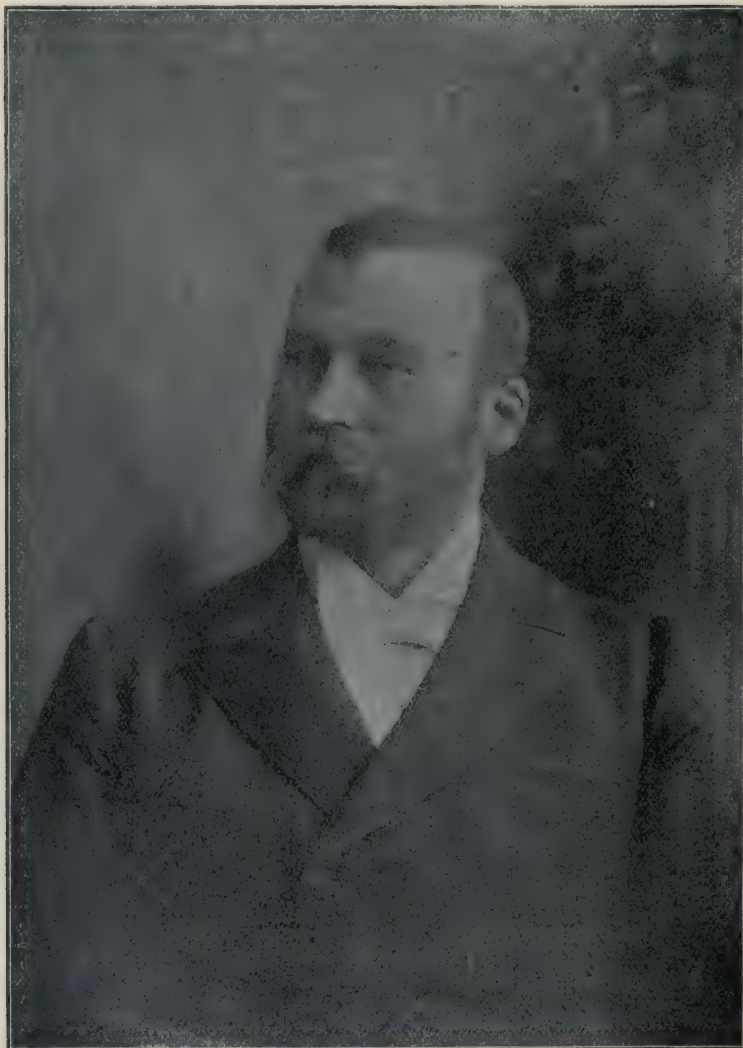


FIG. 1937. DR. J. J. HARE.

We have pleasure in introducing to our readers a new contributor to the pages of the Canadian Horticulturist in the person of Dr. J. J. Hare, Principal of the Ontario Ladies' College at Whitby. Many members of our Association will remember with pleasure his genial face, and warm greeting he extended to us on the occasion of our meeting at Whitby, nor the kind contributions of vocal and instrumental music made by the young lady students of Whitby Ladies' College.

Dr. Hare has an excellent record, having been Principal of the College since its inauguration in 1874, and under his care it has grown to be a most flourishing institution. The young ladies are prepared for first and second year examinations with honors of Toronto University. The departments of music, fine art, elocution, commercial branches and domestic economy, are all equally well provided for.

Dr. Hare is well known at Grimsby Park, having lectured therein all eighteen times on different scientific subjects.

AT the time of the meeting of the Fruit Growers' Association in Whitby last year I promised the worthy editor of this journal that I would write for him an article on Mushrooms. I have on different occasions since that time been courteously reminded of my promise, but have hitherto been unable to fulfil it. The

fact of the matter is, the subject is too extended and too important to be condensed into one article, and hence I feel obliged, if I undertake the work at all, to write a series of short articles descriptive not only of some of the more common edible mushrooms, but also of some of the poisonous species. In doing so I shall be guided largely by what



FIG. 1938. ONTARIO LADIES' COLLEGE.

has been found in the neighborhood of Whitby. Last week I received a basket of mushrooms from a friend, containing two specimens, in which I felt greatly interested. One of these was a white gilled mushroom called the *Lepiota nancinoides*, an edible species just about as highly prized as the well known pink gilled mushroom, *Agaricus campestris*, and yet so much alike in its gills and cap the deadly white *Amanita*, that it is desirable to devote at least one article to a clear and definite account of the well marked peculiarities of the whole *Amanita* class. I have been pleased to learn that the honored President of the Fruit Growers' Association has become an interested student of micology, and that he has had the good fortune of gathering a

large puff ball and practically testing its esculent properties, and that he has done me and the readers of this journal the favor of having this magnificent "fruit" photographed to illustrate this article. On this account I shall begin with the puff ball. Without attempting to discuss this subject in a thorough or exhaustive manner, I would say that the puff ball belongs to the large class of plants known as Fungi, to which also belong the rust, the smut, the mould, the yeast plant, the bacteria, etc. It belongs also to the division *Gasteromycetes*, or stomach fungi, so called because the hymenium or spore bearing surface is enclosed in a more or less spherical case called the peridium, which ruptures at maturity and expels the spores in the form

of dust. All mushrooms, of whatever kind, grow from spores. These produce fine threads in the soil known as the mycelium. Upon these threads or vines appear at first tiny knobs or conglomerations of cells about the size of a pin's head. These rapidly develop under favorable conditions of soil, combined with moisture and warmth, and soon lift their heads above the soil and appear as baby mushrooms, which quickly attain to maturity. That which we see is really the fructification or fruit of the mushroom. In the case of the puff ball, there is little difficulty in distinguishing it from all other kinds of mushroom fruit. The only possible mistake that can be made is in confounding a young *Amanita*, when just emerging from the ground, with one of the smaller species of puff balls. The *Amanitas* are our most poisonous mushrooms. Though gilled like the common meadow mushroom, they emerge from the ground enclosed in a spherical volva or sheath, and to a careless observer might be mistaken for a puff ball. The slightest examination of the internal structure will show the marked difference. The young *Amanita*, when broken open, will reveal the enfolded form of the mushroom within; whereas the puff ball will be found to be solid and homogeneous throughout. It is a comforting thought that no poisonous puff ball has been found in any part of the world. From time immemorial the small boy has kicked it aside as a useless and unsightly thing, little dreaming that it contained for him a supply of palatable and nutritious food. The Rev. Dr. Badham, an eminent British authority on mushrooms, expressed his regret that tons of wholesome food were rotting every year on the ground because no one had sufficient knowledge to take advantage of it. The same remark applies with equal force in this country, hence it is high time that something be done to disseminate information, and I know of no association

so likely to be interested in the subject, or so capable of understanding it, as the Fruit Growers' Association. I admit that many have been deterred from the study of mushrooms, or micology, by the fear that it was an abstruse subject that was beyond their grasp and fraught with terrible risks. I shall endeavor in this series of articles to show that a very little knowledge will enable the reader to add materially to his "fruit" supply, and with perfect safety to himself. The accompanying diagram is a representation of the internal structure of a puff ball and serves to explain some of the technical terms used in describing it.

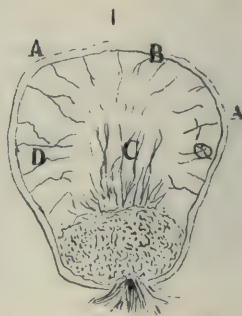


FIG. 1939.

A—Interior rind, bark or skin—peridium.
 B—Inner rind or true peridium.
 C—Filaments rising from base—columella.
 D—Cottony threads or hyphae producing spores—capillitium. The space they occupy is called the gleba.

E—Empty, sterile cells—space they occupy called the subgleba.

Most of the puff-balls belong to two genera—*Lycoperdon* and *Bovista*. Shall describe a few of the more common species.

Lycoperdon giganteum, or the Giant Puff-Ball. This is the one gathered by Mr. Orr, and of which the photograph is here given. Its great size will readily distinguish it from all other species. Its diameter is usually from eight to fifteen inches, though some have been found whose diameter was

twenty-five inches. Mr. Orr's specimen was an exceptionally fine one, and had a diameter of about sixteen inches. Dr. Curtis calls it the "Southdown of Mushrooms," and states that it has a delicacy of flavor that makes it superior to any omelette he ever tasted. He also claims that it is so easily digested as to adapt itself to the most

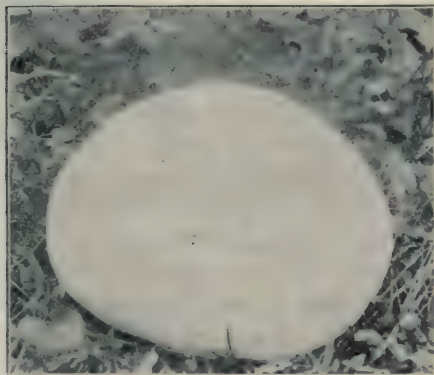


FIG. 1938. A GIANT PUFF BALL.

delicate stomach. I can corroborate this opinion by personal experience. Mrs. Hussey, of England, gives the following recipe for cooking: First remove the outer skin; cut in slices half an inch thick; have ready some chopped herbs, pepper and salt; dip the slices in the yolk of an egg and sprinkle the herbs upon them; fry in fresh butter and eat immediately.

Some mycologists have recommended cutting off a slice horizontally every day, using great care not to disturb the growth or induce decay. In this way it may last for a week.

Lycoperdon cyatheforme, or Cup Shaped Puff Ball. This is the next largest of the puff balls. Its diameter is ordinarily from three to six inches. It gets the name, *cyatheforme*, or cup-shaped, because the upper part of the peridium falls away when

mature, leaving a cup-shaped base with ragged margin, which may continue through the winter.

Lycoperdon pyriforme—Pear Shaped Puff Ball. This has a short stem-like base and is often found in dense clusters on the trunks of fallen trees.

Lycoperdon gemmatum—Warted Puff Ball. This is nearly spherical in shape, usually the basal portion is narrower than the upper. The surface is covered with small, irregular warts. When these fall off the peridium presents a dotted or reticulated appearance. This species is quite common in our college lawn. Sometimes several appear crowded together on the ground. The height is from one and a half to two inches.

Lycoperdon saccatum is smaller than preceding and without any semblance of stem.

The only species of the genus *Bovista* that I have time to describe is the little lead-colored *Bovista*, known as *Bovista plumbea*. This is quite common. It differs from the *Lycoperdon* in its more perfectly globular shape and in the more tough and smooth rind in the mature plant. The peridium opens by a small aperture at the top for the dissemination of the spores. When squeezed the spores will escape from the opening and appear like a little puff of smoke.

In conclusion I would say that the larger puff balls are much finer in quality than the smaller, and that no puff ball is fit to eat when it shows yellowish or brownish streaks through it or has become watery in the interior. It may be added that the dusty spores of the mature puff ball are often used to arrest hemorrhage from wounds.

J. J. HARE,

Ontario Ladies' College, Whitby, Ont.

NOTES FROM THE BIOLOGICAL DEPARTMENT, ONTARIO AGRICULTURAL COLLEGE.

THE following notes bearing on horticultural topics are based partly on the past season's observations, and partly on the experiences of previous seasons.

Our correspondence with fruit-growers from various parts of the Province has been unusually heavy this year, and there appears to be a growing demand for more information regarding spraying, and insect and fungous troubles.

FRUIT DISEASES.

It is acknowledged by nearly every fruit-grower that the fungous diseases which are usually so destructive have not been very severe this past season, and have given but little trouble. This happy circumstance has resulted from the peculiar seasonal conditions. The early summer was very dry, and the moist conditions which ordinarily surround the spores blown from one plant to another were absent, and germination became impossible. Mildews on the grape were rare, but in one or two localities the gooseberry mildew was difficult to control. Apple scab was not serious, and leaf-spots were not common.

The dryness of the season, which was so unfavorable for the germination of spores and the development of fungous diseases, produced some peculiar features in *tomatoes*, *pears* and *peaches*. Many of these fruits had peculiar indentations, as if made by the pressure of a strong finger. Sometimes three or four of these were found on single pears and peaches. These indentations were very common on the pear, and no doubt interfered with its sale on the market.

On examination the tissue immediately beneath the indentation was found to be

drier than the remaining tissue, and unlike anything produced by fungi. As the spot increased in size the area of dry tissue also increased, so that the condition was simply one of drying up of tissue in certain localized spots.

In the case of the tomato the disturbed area was very plain, and resembled the early stages of the tomato rot (*Macrosporium*). There was a diseased, sunken, circular spot covered by a tough grey skin, beneath which the pulp was dry. As the area increased in size bacteria gained an entrance and a rotting took place.

It is difficult to state definitely the exact cause which led to such a disturbance, but probably the chief factor was a diminution of moisture supply to the grown fruit at a time when evaporation from the fruit was still active.

FALL ORCHARD CLEANING.

Much can be said in favor of an annual *fall orchard cleaning*, although many of our fruit-growers are indifferent in this matter. Aside from the fact that there is more leisure after the fruit has been gathered than in the rush of our early spring when so many odds and ends must be attended to, there are many urgent and convincing reasons why our orchards should be very carefully cleaned of rubbish and litter during late fall and early winter. Many insects and fungi pass their resting stages during the winter among the grass and fallen leaves. Hedges and fence-corners are favorite hiding places for many destructive insects, and whenever possible these places should be searched, and the collected rubbish burned. If this



FIG. 1941.
CANKER WORM.



FIG. 1942. CODLING MOTH.

cleaning be left till the spring many of the insects will have left their winter-quarters, and got away, prepared to continue their depredations for another season. When the foliage falls from the trees many cocoons will reveal themselves, tucked away in crevices or crotches, and in folded leaves, which still cling to the branches. Egg clusters, too, will be readily seen if present. All these should be removed and burned. A little time spent at this season among the trees, searching for cocoons, folded leaves, and egg-clusters is money saved for the next season.

People often wonder how it happens that certain insects appear in such alarming numbers during the summer. A few careful observations during the fall and winter will show how these insects pass the cold period of the year. The egg masses of the tent caterpillars will be found encircling the smaller branches. If these bracelets of eggs be removed whenever seen much serious injury will be averted the following spring. The canker-worms pass the winter in the egg state, and these eggs are often to be seen in masses on branches. The codling-worm passes the winter in a cocoon, under bits of bark, boards, and in crevices, and a general clearing will get rid of many of these

troublesome pests. The grapevine flea-beetle and the plum curculio pass the winter in their full-grown beetle condition in sheltered spots, often near the base of the plant. Squash-bugs also winter over full-grown in sheltered spots, under boards, and in corners of outbuildings.

There is also a necessity for a thorough cleaning up of the orchard for the purpose of destroying many of the fungi which remains on the ground in diseased leaves and

FIG. 1943. AMERICAN TENT CATERPILLAR—
a and b, caterpillars on nest; c, egg cluster;
d, cocoon; e, male moth; f, female moth.

fruit. It is a well-known fact that many injurious fungi produce winter spores, and though the leaves decay the spores do not. In early spring these will produce spores which will soon spread to the early leaves. The diseased fruit, plants and leaves, should be burned, not thrown on the manure pile, for then the spores will be able to survive the winter, and reproduce the disease the following season. Moreover, many fungi persist in the leaves as delicate threads, which develop rapidly in the spring and pro-

crop; but with the cooler weather of the last week of September and the first weeks of October, a decided change for the better has come over the crop, so that with careful handling fair results may be secured after all. According to a report issued by the Division of Vegetable Pathology at Washington shade is of very great importance in growing of celery free from this blight. When the soil is cool and moist, and the air humid, as at Kalamazoo, Michigan, the disease is unknown.

Experiments show that much advantage is derived if the rows are sprayed regularly every two weeks with ammonical carbonate of copper.

ASPARAGUS RUST.

From reports, and from observations made during a recent visit to the Niagara region, I am in a position to believe that the majority of asparagus beds of that district are in danger of being destroyed by the asparagus rust. At this season the black rust spots are plainly evident on the stems, branches and leaves, while the wilting and bleaching of the whole plant are still more plainly seen. Many of the owners are alarmed, and with the recent introduction of the asparagus beetles more than a few have decided to give up the culture entirely. This rust has done much mischief in many of the States, and a timely warning, I trust, will be appreciated.

Asparagus Rust (*Puccinia Asparagi*) is closely allied to the wheat rust, and like it produces several kinds of spores during the season, but unlike it forms all these different kinds of spores on the same plant. The early shoots of infested plants will bear yellow cluster cup-spores, and later shoots brown pustules of summer spores, followed later on by the black spots and streaks which are so common just now. The dark-brown spores which are set free from these spots are winter spores, and if left undisturbed will continue the crop of rust for next

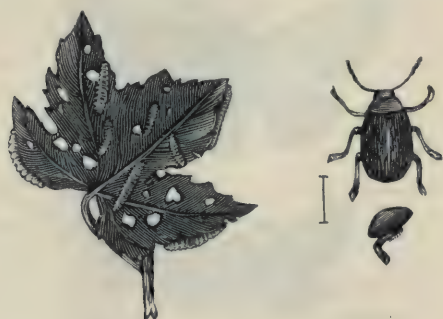


FIG. 1944. FLEA BEETLE.

duce spores which are soon blown by the wind to the leaves where they germinate and produce disease.

It may safely be said that if all leaves, decaying fruits and diseased twigs be burned at the approach of winter the damage from fungous diseases would be lessened very materially.

THE CELERY BLIGHT.

Many celery plantations were seriously affected with a blight which caused the leaves to wilt and die. The pale spots increase in size and become yellow. It would appear that the celery which was most seriously attacked occupied high, dry land, fully exposed to the sun, and the plantations on low, moist grounds were exempt from the disease. During August and the greater part of September the rows of diseased celery showed very little growth, and every evidence pointed to a complete failure of the

season with still more damaging results. The early wilting of the asparagus plants this fall means a poor crop next season. All wilted and diseased plants should be cut and *burned* unless the owner wishes to have a very inferior, useless crop next season.

In view of the fact that the beetles are

active in many beds, it would be a wise thing to spray the beds several times with Bordeaux and Paris Green immediately after the spring crop is gathered. This spraying will keep both the rust and the beetle in check.

W. LOCHHEAD.

O. A. C., Guelph.

FRUIT EXHIBIT AT THE PAN-AMERICAN.

SIR,—There will probably be some very satisfactory results, and also some dearly bought experiences in making our exhibit of Canadian fruits at Paris, France, this year. It has not been my privilege to receive any detailed report as to what condition the fruit was found when required for the tables, but it is generally acknowledged that one of the greatest trials of the Horticultural Departments of previous Expositions has been that of providing fruits so that a good exhibit might be obtained from the opening time of the exhibitions.

For the World's Fair, Chicago, arrangements were made with Swift & Co. for the storage of 180 bbls. apples, consisting of 34 varieties.

A few weeks ago, Mr. F. W. Taylor, Supt. Horticultural Division, wrote Swift & Co., asking them to be kind enough to supply such information as would indicate what sort of storage was used, and results.

Reply as follows :

DEAR SIR,—Replying to your favor in reference to apples which were stored for the Nebraska State Horticultural Society on our plant here, will say that those apples were stored in warehouse, cooled by natural refrigeration temperature ranging from 36 to 42°, and was thoroughly dry.

For your information will state that we made tests on apples which were stored with us, and found apples packed in *waxed paper* kept better than those packed in brown, or than those which were not wrapped at all.

We are certain that any temperature ranging from 36 to 42° is a desirable temperature for storage of apples provided same is dry.

Trusting this is the information you desire, we remain yours, etc.,

(Signed) SWIFT & Co.

Mr. Youngers wrote a very full and complete report upon the subject of keeping apples which was read at the winter meeting of the Nebraska State Horticultural Society. This report is of such great interest to us at present that a copy is here given of a portion of the report giving results on the first 15 varieties, giving the percentages indicating the condition of the varieties named at the date mentioned :

	June 15	July 14	Aug. 2	Sept. 2	Oct. 2	Nov. 1
Ben Davis	10	10	10	10	10	10
Wine Sap.....	10	10	10	10	10	10
Juneating.....	10	10	10	10	10	10
W. W. Pearmain.....	10	7	6	6	4	3
Limbertwig	10	10	10	10	10	10
Allan's Choice	10	10	10	10	9	8
William Twig.....	10	10	10	10	10	10
Sweet Russet	10	10	9	9	8	8
Red Romanite	10	10	10	10	10	10
McIntosh Red.....	9	9	9	9	9	9
Salome.....	9	9	9	9	9	3
Dominie	9	8	8	8	7	6
Roman Beauty	8	8	8	7	6	5
Iowa Blush.....	8	8	8	8	7	5

Other varieties stored gave slightly lower percentages than the above.

Mr. Youngers, in compiling this report used the scale of 10. Those found in perfect condition were marked 10, and those more or less damaged marked accordingly.

The markings were made at time of taking from cold storage.

He was satisfied that wrapping first in waxed paper and then in any common paper and packed and pressed in barrels gave decidedly the best results.

In order to test this matter a few barrels were placed in storage without any wrappings—varieties, Ben Davis and Wine Sap. They were placed in the same storage room and received the same treatment as those wrapped, yet fully 70% of them were decayed when taken out June 1st; not only were they decayed, but those remaining in a firm condition were so badly discolored and so off-flavored as to make them unfit for show or market. A few of the same varieties were wrapped in newspapers, not using waxed sheets, and of these fully 30% were in poor condition June 1st, while the same varieties wrapped in a double wrapping of waxed sheets and common paper remained in almost perfect condition as late as November 1st.

I do not know what steps have been taken by either the Dominion or Ontario Governments or the Associations in the way of providing for a spring exhibit of fruit at the Pan American at Buffalo next spring, and I feel I should at least mention the subject to you and take the liberty of offering a suggestion,—that some competent man be appointed to correspond with a few

or limited number of our best fruit growers, and ask them to select and place in their cellars at once a number of barrels of apples, varieties that are to be named, and that the agent visit those growers, and re-select, wrap and pack the fruit and ship to cold storage, the agent to take the wrappers with him. In that way the fruit would be of more uniform quality and the packing correct. I hope this matter has received the attention of the executive.

The above letter is written with the idea of offering a few ideas, the fact of which you were probably aware of, and with your experience of recent years past methods may have been improved upon, but I am anxious to see Ontario hold her own at Buffalo.

Would you kindly let me know what has been done in the matter, and if the Government will give us a grant to meet this exhibit.

HAROLD JONES.

Maitland, Ont.

NOTE BY EDITOR.—We have already brought this subject under the notice of the Hon. John Dryden, who has authorized us to secure cold storage space for at least 100 bushels of prime Canadian apples, to be stored at Buffalo. In case Ontario proceeds to make a fruit exhibit, these will be in reserve to be drawn on from time to time for filling the tables. Already we have secured these apples from our various experiment stations and others, and we are having them wrapped first in waxed paper and then in manilla tissue, just as our correspondent proposes.

OUR APPLES WANTED IN UNITED STATES.—After all the great outcry about the enormous crop of apples on this continent, it is rather surprising to receive such a letter as the following from a neighboring city. Perhaps, after all, the United States will prove a competitor even this year for our excellent Canadian apples. It is Messrs. Armacost, Riley & Co., of Cincinnati, who write as follows, on the 28th September :

While winter apples appear plentiful, fall fruit is as scarce in our market as we have ever known. The demand for soft varieties, such as Colverts, Jennetings, Alexanders, Maiden Blush, etc., is enormous, and the few coming forward from the east sell at \$2.50 to \$2.75 per bbl., and we believe the large Canadian packages would bring \$3.00 quick. We have never known a better opportunity to make money on fall fruit, and if you are packing or can do so promptly, write or wire. The weather is now cool and ordinary box cars can be used in shipping.

CANADIAN FRUITS IN ENGLAND.

THE last parcel of Canadian fruit that was put upon the market this week was of an instructive nature, for it proved clearly that the fruits of the Dominion can be sent into England in the pink of perfection. Amongst the varieties put up for sale were some very fine Williams (or Bartletts, as they are called in Canada), Duchesse and Beurre D'Anjou, the last variety of which is a very dainty pear, and is sure to make headway in our markets. The shipment sent consisted of 1,000 cases of pears, and, in addition, there were some peaches and a few apples. The former consisted of Elberta and Crawfords.

The samples of pears were unusually large and fine. The Williams were grand, and it is clear that no competitor on the market from any outside centre can touch them, for as far as quality, size, flavor and color, are concerned they are as perfect as a market William pear can be. The other varieties are also of prime quality. It is thus evident that at last the whole export business has been put upon a proper basis, and that Canadian growers and shippers may rest

satisfied with the situation as far as methods of transit are concerned.

This highly satisfactory condition of things has been brought about under the auspices of the Hon. Sydney Fisher, M. P., Minister of Agriculture for Canada. In future, we now know that Canadian fruits of the most delicate nature can be shipped to the United Kingdom with the satisfaction that they will come to hand in a perfectly salable state, so that there is no reason why Canada, the premier fruit colony of the Empire, thanks to the fostering influence of its Minister of Agriculture, and the ably-led department over which he presides, should not develop a gigantic trade in fresh fruits, especially with this country.

We learn that other fruits are to follow, that 1,000 cases of grapes will soon be seen upon our markets in one shipment, and that they will be of equal quality to the pears. The fruit dealers, buyers, and consumers of our cities will appreciate these Canadian shipments, and as they are of the highest quality their popularity with the masses must be an increasing one.

SAMPSON MORGAN.

WINTERING APPLES, ROOTS, ETC.—I never had better, juicier, tenderer apples to eat in early spring than those taken out of a pit outdoors. For that reason I have always favored the plan of wintering at least a portion of my apples for home use in that way. This method seems to keep all the flavor and all the brittleness in the apple intact, and perhaps is the simplest and safest of all for ordinary uses. The apple is less susceptible to injury from freezing

than potatoes. It ranks about with mangels, beets, turnips and similar root-crops in this respect. Every farmer may be supposed to know how to pit potatoes. Apples can be handled in the same manner, only that a little less covering may be needed. Where the subsoil is porous we may dig a pit a foot or more in depth, otherwise we must select a well-drained spot, and put the apples on top of the ground, resting on a good layer of clean straw. Pile up the apples in a conical

heap, inserting a wisp of straw into the centre of each heap and letting it stick out of the top. This latter is for ventilation. Gases and heat must have a chance to escape. Next put on a generous covering of straw or marsh-hay. If it is a

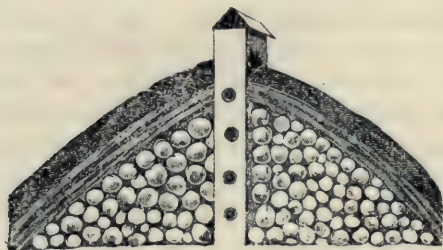


FIG. 1945.

FUMIGATION FOR SCALE.—Prof. Lochhead, of the O. A. C., Guelph, gives the following memo. for the guidance of nurserymen in the fumigation of nursery stock :

1. Formula for apple, pear, plum, cherry, quince, shrubs and vines : Cyanide, $\frac{25}{28}$ of an ounce ; sulphuric acid, $1\frac{1}{4}$ fluid ounces ; water, $1\frac{7}{8}$ fluid ounces for every 100 cubic feet in house or box.

2. Formula for peach, raspberry, gooseberry and currant : Cyanide, $\frac{2}{3}$ ounce, sulphuric acid, 1 fluid ounce ; water, $1\frac{1}{2}$ fluid ounces for every 100 cubic feet in house or box.

3. The following plants do not require fumigation : Evergreens, strawberry plants, bulbs and tubers, herbaceous perennials and bedding plants.

4. Damage may be done to stock (a) if fumigation takes place too early in the fall,

foot or more in thickness it will do no harm. In place of a wisp of straw an upright box, say six inches square and long enough to reach from the ground to a few inches above the top of the heap when done, as shown, will supply the needed ventilation. The earth covering which comes over the straw all around need not be more than a few inches thick. The pit is thus to be left until freezing weather, when a further covering of straw and earth, or a very heavy covering of coarse manure, is to be placed upon the frozen earth of the first covering. Roots are pitted in the same manner.—*Farm and Fireside.*

before the buds are set and the wood sufficiently dormant, and (b) if fumigation takes place late in spring after the buds have begun to swell.

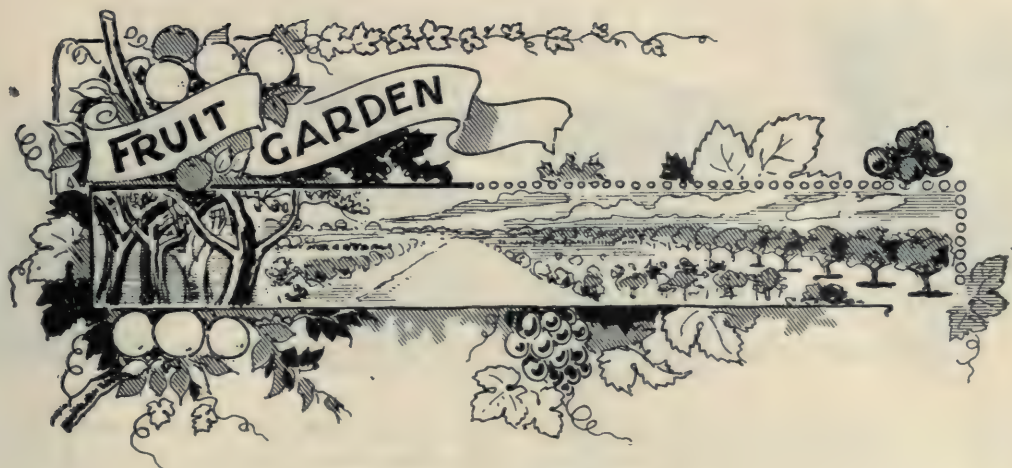
5. The roots of stock should be exposed for as short a time as possible, both before and after fumigation. Experience shows that much injury has resulted from such exposures.

6. No nurseryman shall use chemicals other than those sent from the Agricultural College, Guelph, except by special permission of the Inspector.

7. Nurserymen should bear in mind that a certificate of fumigation must be attached to every package of nursery stock sent from the nursery.

8. No fumigation house is to be used for fumigation purposes until sanction has been obtained from the Inspector.





FRUIT CULTURE—XIV.

THE STRAWBERRY.

THE earliest and possibly the most wholesome of all fruit, who would not grow strawberries? And yet many a farm home is without a supply of this fine fruit; and many others, owing to a lack of knowledge or a want of thought on the farmer's part, get samples that are but caricatures of this noble berry at its best. Like the other small fruits the strawberry imperatively demands a rich, well-drained and moist soil. Unlike the raspberry, it is a comparatively shallow feeder, and this fact must guide us to some extent in manuring and in tillage. Thorough preparation of the soil before planting will especially pay in the case of the strawberry. The ground should be thoroughly worked, and if underdrained or if subsoiled so much the better, as such soil will be drier in a wet season and moister in a dry season. As no fruit is looked for the first season, but only a good strong lot of plants, well-rotted barnyard manure is the most profitable as it is the most convenient of fertilizers. In the second year, when fruit is the object, the case is different. The berries take practically no nitrogen out of the soil, and as this

element is the important one in barnyard manure it is obvious that such manure could be better employed elsewhere. We have an ideal fertilizer for the berries in unleached wood ashes, which contain in well-balanced proportions the two elements required by the fruit—potash and phosphoric acid. This may be applied broadcast over the patch in the late fall or on light soils very early in the spring. Anywhere from 50 to 100 bushels to the acre may be profitably used, and, for preference, the larger amount. Spring planting is usually found best. Put out young, vigorous plants as early as possible so that they may get thoroughly established before dry weather comes. From three to four feet between the rows and eighteen inches in the row will be a suitable distance. In a large patch the rows may be marked with the corn-marker and the holes made by striking a spade in the ground and moving it backwards and forwards. A boy can follow and spread the roots of the plant fan-shaped in the cleft. Whatever method of planting is followed the important things are that the earth should be well firmed round the roots and the plant set the right depth.



FIG. 71



FIG. 72



FIG. 73



FIG. 74

The above illustrations from Bulletin 27, Central Experimental Farm, show clearly how to do and how not to do it.

Fig. 71 is obviously all right. In Fig. 72 the root system has a poor chance to develop quickly. Fig. 73 shows a plant too deeply set. In such a case the crown would be smothered and the plant die. In Fig. 74 the reverse has happened and the plant would probably soon wither and die.

rows of varieties with imperfect blossoms will answer the purpose. Cut off all blossoms from the newly set plants. They will produce fruit at the expense of growth. Cultivate and hoe thoroughly and often. If possible do not let a single weed go to seed the first season and you will be well repaid

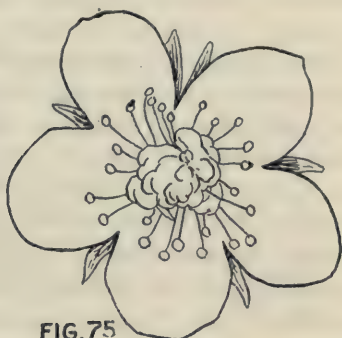


FIG. 75

Perfect Flower

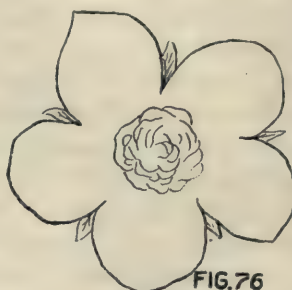


FIG. 76

Imperfect Flower

Strawberries may be practically divided into two classes, those with perfect and those with imperfect blossoms. The former has both stamens—male organs—and pistil—female organ. The latter only the pistil.

In Fig. 75 and 76 illustrations of each kind will be seen. As a pistillate variety cannot produce fruit unless fertilized by the pollen from a perfect flower, it is necessary to see that at least part of the patch is given up to varieties with a perfect flower. One row of "perfect" varieties to every three

the following year. On the whole the "matted row" system of growing is the best. Some growers cut off all runners for the first two months and then let them grow; others—and this is probably the better plan—allow a few runners to establish themselves from each plant and then cut off all subsequent runners. In this way a sufficient amount of strong, vigorous plants are ready for fruiting next year. In any case the mistake should not be made of getting a wide, densely matted row, where half the plant is producing little or no fruit, or fruit of an in-

**FIG. 77**

Williams.

**FIG. 78**

Bubach.

**FIG. 79**

Warfield.

ferior quality. The continual freezing and thawing that often takes place in the latter part of the winter is seriously injurious to

the plants and a winter covering is therefore generally advisable. The mulch should be put on when the ground first freezes up and

**FIG. 80**

ALYPE.

raked into the space between the rows directly spring growth commences, where it will conserve moisture and keep the berries clean. In a small way pine boughs and a layer of leaves answer admirably. On a large patch marsh hay or clean wheat straw will do. A manure mulch produces too many weeds, and any mulch that packs very closely will do more harm than good. The labor involved in keeping a patch in good shape for a second year's fruiting has made the practice of resetting every year very general. Certain varieties do so much better in one locality than another that no positive statements as to the value of varieties can be made. Let every man ascertain what kind does best under his local conditions.

The following list of well tried varieties is suggested :

Haverland. Pistillate, large, productive, rather soft.

Bubach. Pistillate, very large, not a good "runner."

Warfield. Pistillate, medium size, very productive.

Williams. Perfect blossom, large and firm, and good yielder, though tendency to show a green tip.

Van Deman. Perfect blossom, early.

Dominion. Perfect blossom, late.

Clyde. Perfect blossom, a new and very promising variety; large, vigorous and productive.

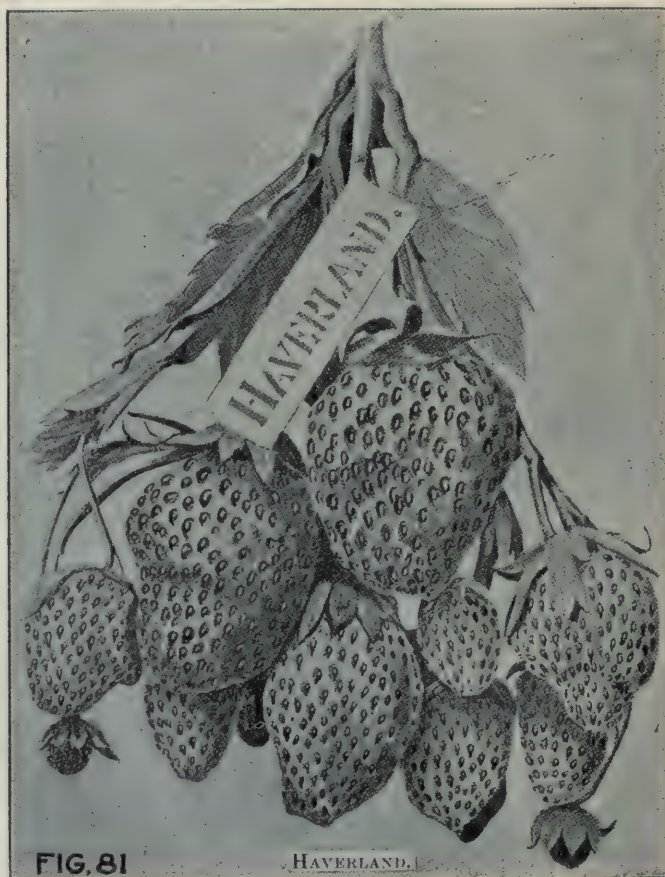


FIG. 81

HAVERLAND.



FIG. 82. Leaf Rust.

Diseases. The chief disease attacking the strawberry is the Rust fungus, Fig. 82. Where foliage is much injured by this disease it naturally affects the production of new plants and the subsequent crop of fruit.

One spraying of the Bordeaux mixture before fruiting, and two later on, if the patch is kept over, will do much to control the rust.

Grand Forks, B. C.

M. BURRELL.

STRAWBERRY CULTURE.

FALL PLANTING.

WHILE nearly all commercial growers plant their strawberries in the spring, a great majority of the skillful amateurs prefer to plant in the summer or fall. Peter Henderson said that if he were planting fifty acres he would use potted plants, and set them in the summer or fall. As we can do no more spring planting this year, we will consider the matter of fall planting. First, let us inquire into the habits of the plant. It is entirely different from nearly all other plants with which we have to deal. It is a stemless plant, and yet it produces neither bulbs, corms nor tubers. It consists of a crown from which roots extend into the soil and the leaves into the air. The crown is the im-

portant part of the plant, and contains within itself at the close of the growing season, much of the material that enters into the crop the following year. All the effort of the grower is directed towards surrounding the plant with the most favorable conditions so that it may build up a strong crown.

The strawberry plant is a perennial, and, under favorable conditions, will bear year after year, yet it will simplify matters and help us if we consider it a biennial. No part of the plant lives more than two years—not much over one indeed. The roots now being made by the earliest runners will turn back and die next summer, and a new lot will come out above them, and a new crown will be built up on top of the old one. The leaves

that go into winter quarters soon die in the spring, so that while the plant seems to be the same, it has new roots, new leaves and a new crown. This shows the importance of getting all the growth possible during the growing season, taking good care of the plants through the winter, and getting the new growth started as soon as possible after the crop is secured.

SOIL.

The best soil you have that is available will be found just right for the strawberry. The plant needs plant food and moisture, and if these be supplied it is immaterial whether the soil be light or heavy. If it be very sandy or gravelly it will be harder to keep it moist. If too low, there is more danger from late frost. If just south of a building or a tight board fence, the plants may get more reflected heat than is good for them, and if in the neighborhood of large trees their roots will run under the plants and deprive them of food and moisture. Many a strawberry bed has been ruined by the roots of trees from one to two hundred feet away.

PREPARATION OF THE SOIL.

Make it fine and firm. If the soil be deep it may be plowed or spaded to a good depth provided it is made fine and compact afterwards. It is much better not to plow at all than to leave lumps and cavities. Plants will not do their best in too loose a soil. They may make a good growth, but they will not bear well. A cavity of any size directly under a plant will prevent it blooming at all. I have set plants on ground that was trenched thirty inches deep, and on hard soil with only three inches of the surface made fine, and had good success in both cases. The soil loses its water mostly by evaporation, and I am unable to see why the plant can not get its water just as well within a few inches of the surface as a foot below, provided the ground is mulched.

The ground should be rich in potash and phosphoric acid. It is not best to apply too much nitrogen, as it causes a rank growth of foliage and runners, with little or no increase in the crop of fruit. If the intention is to plow up the bed after bearing, nitrogen may be applied liberally after the berries are formed. Stable manure may be applied during the winter with decided advantage. No lime should ever be put on land for strawberries.

PLANTING.

The time to plant in the summer and fall is just as soon as you can get plants and damp soil. Each day's growth adds to the crop. It is well to remember, however, that the hot and dry weather of July and August are very unfavorable for newly set plants, and the chances of having the plants make a steady growth from the start—which is very important—are much better if the planting be deferred until September, when we are likely to have more moisture in both the soil and the air. Very young runners planted any time in September will produce as large berries as if planted much earlier, but not so many of them. It is well to remember that any check to a strawberry plant during the growing season is quite serious. For this reason it is safer to plant later than to get the plants out early and have them remain at a standstill on account of heat and drouth.

After getting the ground prepared, it is worth considering what kind of plants to use. It is generally conceded that runners of the present year's growth should be used, but I have known several growers who preferred the old plants that have just fruited. I have used them myself with good success. A young runner is considered merchantable as soon as its roots are branched. These are the plants most generally used. A most excellent method is to take these young layers and transplant them into mellow soil a few inches apart, where they can be shaded and watered for a few days. In a week or

STRAWBERRY CULTURE.

ten days they may be taken up after a thorough watering, with the soil adhering, and set where they are to bear. They are equal to potted plants.

Potted plants have been exceedingly popular, and are sold in very large numbers. Very much may be said in their favor, and this we hear. There are some serious objections to them, and these are seldom spoken of. The chief advantage is that they may be transplanted, even by inexperienced persons, and receive little or no check. The pot is sunk in the soil near the runner that is to be potted, filled with earth and the young runner placed in it and held in place with a small stone. In two weeks it may be cut from the parent plant and removed to a frame where it is to be watered and possibly shaded for a few days. Potted plants are costly, especially if shipped far by express. If they remain in the pots too long they become pot-bound and, worst of all, the larvæ of the crown-borer and other enemies may be carried to the new bed in the pots.

If one wants potted plants without the expense of transportation, he can buy layers and pot them himself. Many of the potted plants sold are quite unsatisfactory. I usually report all that come to me. A good potted plant is a prize, but not all are good.

The conditions of success in transplanting are that the plant be kept from drying while out of the ground, that the roots be put in close contact with the soil, that the crown be level with the surface, and that shade and moisture be supplied until the plant has recovered from the effects of removal. This is where potted plants have the advantage; they are not taken out of the soil in which they rooted.

Almost as soon as the plants are transplanted cultivation should commence. The object is not to kill weeds—although it does this incidentally—but to keep a loose surface so that the water coming up from the subsoil by capillary attraction may be prevented from

reaching the surface and escaping, but may be held underneath the loose soil where it is utilized by the plants. When we consider that all the food taken up by the roots of plants must be dissolved in water, and that for every pound of dry matter deposited in a plant, 300 lbs. of water must be evaporated from its leaves, we get some idea of the importance of conserving the soil moisture. Within certain limitations, our crops are in proportion to the supply of water.

ENEMIES.

In cultivating the strawberry we are likely to have to do with some insect enemies. The white grub is conceded to be one of the worst. It is liable to be found in sod, and the safe way is to avoid sod land, and plant where cultivated crops have been grown for two years at least. When the crown borer or strawberry root worm gets into a bed, it should be plowed up as soon as the crop is secured, and a new bed should be coming on at some distance from the infested one. Enemies of the strawberry seem to be on the increase, and the plan of taking but a single crop and then plowing up the bed has much to recommend it.

Fungous diseases sometimes claim our attention. The most common is the rust. Every variety is subject to it, but some more than others. Some claim to be able to keep it in check by using the Bordeaux mixture. If plants are kept growing vigorously they are seldom injured to any great extent by the rust. It is however, unsafe to plant a new bed where a rusty one has been plowed under within a year.

WINTER PROTECTION.

After carrying the bed through safely till the end of the growing season, there is one more precaution to take lest the plants be injured by alternate freezing and thawing. The injury comes in this way: soil expands more or less by freezing in proportion to the amount of water it contains. This expansion

only takes place in an upward direction. As the frost penetrates deeper and deeper, the soil rises, carrying in its grasp whatever it is able to lift, whether it is a strawberry plant, a clover root, a garden stake or a fence post. The first thaw allows the earth to settle back in its place, but the plant does not. It may be only one-eighth of an inch, but if repeated often enough the plant will be lifted out of the ground. We have all seen this. Now, if we cover the ground between the plants with an inch or two of manure or a litter of any kind, in October, before the freezing weather comes, the frost will be unable to penetrate the soil so readily. And if it does somewhat, the covering of litter will prevent the thawing of the soil for a time, and the water will settle, leaving the surface so dry that there will be no expansion even if the frost enters the soil. We know that plants are not lifted out of sandy or gravelly soil if

the drainage is good. This freezing of the soil does the plants no good, although they may live in spite of it, and if we can prevent it we should do so. It is generally recommended to strawberries when the ground is frozen hard enough to hold up a team and loaded wagon. This is a mistake. In most cases great damage is done before severe freezing weather comes. My advice is to cover the ground between plants soon after the first frost, then when winter comes, cover the foliage until it is entirely hidden. There is no danger of putting on too much covering if it be taken off before growth commences in the spring. The damage comes from leaving the covering on until the plant starts, and then removing it. The white, tender growth that is made under a mulch is easily destroyed by either heat or cold.

M. CRAWFORD.

CUYAHOGA FALLS, O.

THE BOSCH PEAR.

The Bosch pear will never be a glut in the market, for the reason that the tree grows so crooked and slowly that the nurserymen will not grow it, says Edwin Hoyt in Rural New Yorker. Those who buy trees do not understand that there is as much difference in the habit of growth of trees as there is in animals, and are not willing to pay any more for one tree than another of the same species. If a nurseryman were to bud 1,000 stocks to Bartlett, he would, no doubt, get 900 good trees, while if 1,000 stocks were budded to Bosch, he might not get more than 100 good salable trees, and many of these might have to be staked while growing to get the body up straight so as to make a tree a customer would receive if sent to him. Many nurserymen grow a few Bosch by top working them, that is, by budding the Bosch in the top of some strong growing variety like Clapp,

Buffum or Anjou. To raise the trees in this way, the nurseryman has to charge more for them to pay him for his extra trouble.

If one wishes to obtain a Bosch pear orchard the best way to get it is to set Clapp or some strong growing variety. Let it grow two years, then top-graft it. This, of course, is some trouble and expense to do, yet the one who does it will get a good paying pear orchard, for this variety will never be over-produced. It is a fine pear, a heavy bearer and usually grows smooth and fair with good feeding and cultivation, such as any orchard should have for profit. The Winter Nelis is one of the best of winter pears, but the tree is like the Bosch, so poor and crooked a grower that few trees are raised by the nurserymen. To succeed with this variety, it must be top-grafted as above directed for the Bosch.

PEACHES.

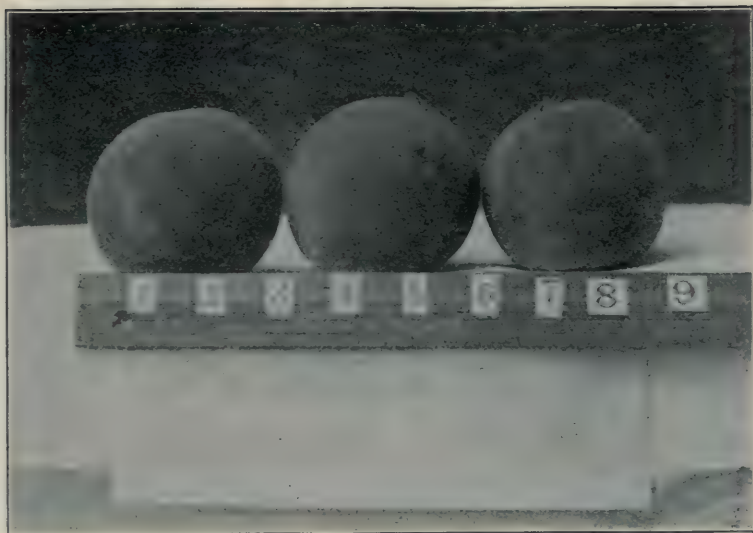


FIG. 1945. THE MAGNIFICENT PEACHES.

SIR,—I take the liberty of sending you a photo of peaches grown in my garden (61 Glengarry avenue, this city), if you think it worthy of notice use it.

A Californian peach stone was sown in the fall of 1896, and the fruit shown in the photo is the result. The Peach is almost perfect, with red blush ; cut open the flesh is a rich,

amber color ; stone small, surrounded by a deep red color ; peach very juicy and exceedingly fine flavored. You will see the weight of the three peaches is 21 ounces, and measure almost nine inches. The peaches were picked October 1st. Yours very truly,

GEO. CHEYNE.

Windsor, October 3rd, 1900.

PEDIGREED FRUIT TREES.—Proseessor G. Harold Hall, of the Delaware Agricultural College, gave an address on the importance of the plant individual in horticultural operations at the semi-centennial of the American Pomological Society. He said: Three Wine-sap apple trees in the same orchard showed a difference of from 30 to 60 per cent. in the yield of apples. This seems to show that there are strong inherent qualities in fruit trees. I think these strains of light and heavy bearing are generally found in orch-

ards. Are the qualities hereditary, and can they be transmitted through the buds and scions from the most productive trees? Can we establish pedigree in fruit trees, and obtain the results of a selection that extends through several generations? From experiments made along these lines; I think the individuality of fruit trees can be, to a large extent, transmitted and preserved. I advise all fruit growers to propagate fruit from the most productive trees.



FIG. 1946. SOME FINE BEGONIAS. (See page 485.)



TIMELY TOPICS FOR THE AMATEUR.—IX.

THE more frequent and intense visitations of frost that usually occur during November, accompanied perhaps by rain or snowstorms, will make work in the garden less pleasant and enjoyable than during the earlier days of autumn. That delightful, but decidedly fickle and uncertain period of late autumn weather—Indian summer—does not always materialize, especially in Southern Ontario. Advantage must therefore be taken of every fine day to straighten up all odds and ends of out-door operations in the garden previous to winter setting in earnest.

The protection of tender plants, etc., will be one of the most important items requiring attention at this season of the year. The too common method of applying a heavy covering of perhaps almost rotten manure indiscriminately to all kinds of plants cannot be too strongly condemned. This method is, generally speaking, very successful in smothering and killing out entirely many of the more tender varieties of perennials and biennials, especially those that are not strictly herbaceous in character. Pæonies, Holland bulbs, lilies, etc., that have little or no top growth to preserve, do not object to a good heavy mulch of manure

during winter. Japan lilies, such as *L. auratum*, *L. speciosum*, and other varieties even more tender than those mentioned, are distinctly benefitted in winter by a good heavy mulching. The hardier varieties of lilies, such as *L. candidum* and *L. tigrinum* (Tiger Lily), will also appreciate a slight protection of this kind during severe weather. Most of the border perennials and biennials, a majority of which may be very properly termed only semi-herbaceous in character, would, however, oftentimes succeed far better if left exposed fully to the vagaries of winter weather without any protection at all, than to have the life smothered out of them by a too liberal covering of heavy mulching material. Perennial border plants, such as dianthus, gaillardias, campanulas, aquilegias (Columbines), perennial phlox, or more especially biennial plants, such as holly hocks, campanula pyramidalis, etc., would certainly suffer very materially by the above mentioned treatment. Many fine collections of the two last mentioned biennial flowering plants have been killed out entirely in winter, by a too liberal application of unsuitable mulching material. This latter evil, combined with attacks of the fungous

disease that has of recent years been so disastrous to hollyhocks, has almost banished this grand old-fashioned flower from our gardens. The *Campanula pyramidalis*, however, seems to be quite proof against either disease or attacks of insects, a little extra care in winter, beyond ordinary culture, being about all it requires to give profuse returns of its handsome spikes of bright colored, showy flowers during the summer months.



FIG. 1947.

SPRAY OF *GAILLARDIA GRANDIFLORA*.

A good covering of snow is undoubtedly a splendid protection to plant life in winter, especially if sufficient of it could be retained in its natural light fleecy form to cover the plants the entire winter through. Experience has taught us, however, that snow cannot always be depended on for a winter covering for plants, especially towards spring-time, when the heat of the sun, or perhaps a warm rainfall with sharp frosts immediately following, converts the cover-

ing of half-melted snow into a thick sheeting of ice over and around the plants. This accumulation of ice is as injurious to plant life as the heavy covering of manure before mentioned, as it often hermetically seals the plants under its icy grasp, entirely excluding air from them, without which very necessary element plant life cannot possibly exist. Alternate periods of freezing and thawing are also very disastrous to unprotected plants.

The great point to be gained in successfully protecting semi-herbaceous border plants in winter is to provide a covering that will exclude to a great degree extremes of frost, as well as the rays of the sun, without excluding air altogether from the plants. Keeping the covering next to the plants as dry as possible is another very essential point in the protection of plants in winter.

There is no better and easier obtained covering for the class of plants mentioned than fresh fallen autumn leaves. Sufficient of these should be first placed about the plants to cover them. Strong wire, or tough pliant twigs, should then be bent over the leaves so as to form an arch. This support of wire or twigs should be strong enough to support any additional covering that may be afterwards thought necessary, so that the extra weight does not bear down on the plants. This second or outer covering should consist of long sedge grass, straw, or long strawy manure, placed over the supports in such a way so as to form a rough thatch, to throw off any moisture and keep the underneath covering as dry as possible. Boards can be used to answer the same purpose as the wire or twigs; these, however, must be well supported, so as to keep them from pressing on the plants. Stone or blocks of wood can be used for this purpose. If the supports are strong, additional covering can be added at any time if required, but as a rule a light cover-

ing of the materials mentioned, with the assistance of a covering of snow, will be found to produce better results than too heavy an artificial covering. Many border plants will often come through the winter splendidly, without any protection, but a light covering, if properly applied, is certainly an additional security.

For roses, tender shrubs, or plants that

covering for young tender trees or plants in winter. The brush or shrub to be protected should first be tied or bunched up in as close a compass as possible. Commence putting on the material at the base of the plant first, allowing each successive layer to slightly overlap the one below it. This method effectually throws off all moisture, thereby lessening to a great extent the



FIG. 1948. BED OF CANNAS AT GORE PARK, HAMILTON, OCT. 12, 1900.

cannot be laid on the ground and protected, no better covering can be found than two or three thicknesses of bass matting. The dried grass mats, used for an outer covering of tea chests that are imported from China, makes a splendid covering for this class of plants. An inner lining of straw, or some similar material, may in some cases be necessary in addition to the matting. Long sedge grass, or even the long leaves or husks of corn, are also useful for a

serious effects of severe frosts. Vines that can be laid down near the ground can easily be protected with leaves, long strawy manure, or sedge grass. None of these coverings that have been mentioned should be put on until quite late in the season, especially in the case of covering up grape vines, as mice and rats may perhaps mistake your protecting material as having been prepared for their especial benefit, to furnish comfortable quarters for them to winter in.

This is more particularly to be taken into consideration where leaves are used as a winter covering for roots or vegetables, as these destructive little nibblers are very partial to snug, warm quarters in winter, especially with a plentifully supplied larder close at hand. If the covering is not applied until after the first fall of snow, these little pests are seldom troublesome.

of bloom standing erect above their handsome foliage, as perfect in form and rich in coloring as it is possible for them to be. Foliage beds of *caladium esculentum*, *coleus*, *ricinus* and *acalyphas*—to say nothing of beds of geraniums, begonias, etc.—can be seen on almost every lawn, resplendent in all their summer beauty of foliage and flower. Verily this, the last



FIG. 1949. BED OF RICINUS, CALADIUM ESCULENTUM AND COLEUS,
GORE PARK, HAMILTON.

Photo taken Oct. 12, 1900.

It seems decidedly out of place and unreasonable, at this date (October 15th) to be writing an article on the protection of plants from severe frosts, as up to the present there has not been the slightest frost in this locality to even dim the rich summer coloring, or check in the slightest degree the luxuriant growth and flower of the most tender exotic plants. Masses of cannas can be seen with their large showy trusses

autumn of the 19th century, must be recorded as being exceptionally fine and beautiful in this section of Ontario. Possibly before this reaches the eyes of our readers a decided change will have come over this scene of summer beauty in late autumn. The accompanying photographs of two of the many fine beds of flowering and foliage plants to be seen in Gore Park, as well as the other parks in the city, will give our

readers an idea of the almost tropical weather experienced in Southern Ontario during the past few weeks. On the 6th of October at 2 p. m. the mercury registered 86° in the shade, at 6 a. m. it was 72°. These were about the highest points reached, although the temperature for the whole of October to the present date has been very much higher than is generally experienced. It cannot, however, be reasonably expected that the summer weather we are enjoying can last very much longer, and it is quite possible that many of our semi-hardy plants will require even better protection during winter than usual. Tropical weather in autumn is not reasonable, and certainly not suited to prepare plant life to withstand a rigorous, severe winter which it is possible we may experience.

THE GREENHOUSE.—This department will now require close attention. Increasing the amount of fire-heat will develop a rapid increase in insect pests, especially green fly or aphid. Give these latter a dose of tobacco smoke, or tobacco water, before they injure the plants. Frequent fumigations, and not of too severe a nature, are much better than heavy fumigations at long intervals.

Chrysanthemums will be in the height of their beauty now. The earlier varieties, such as Midge, Pride of Pacific, etc., will be about over their best. Overhead syringing of these plants should not be indulged in when they are in flower. Give all the air possible without risking the safety of other plants. A little liquid manure will help the late flowering chrysanthemums to swell their buds and produce finer blooms. "Fostite" will check rust on chrysanthemums, as well as on carnations, but will not apparently eradicate this troublesome disease entirely from these plants. Flour of sulphur and dry air-slacked lime mixed together in equal parts and dusted carefully on the under side of the foliage of



FIG. 1950. RICINUS.

chrysanthemums will partially check this disease. Red spider will be almost certain to make his appearance about this time. Keep the atmosphere of the greenhouse or conservatory as moist and humid as possible and syringe well on the underneath side of the foliage, especially that of roses. Cinerarias must be potted into larger pots as required; don't allow the plants to become pot-bound with roots. Thrip often attacks these plants. If the foliage does not look healthy and the leaves are blotched with dull white specks or spots, the minute little pest, "the thrip," is causing the trouble. Dipping the foliage of the plants in moderately strong tobacco water is the best remedy for these almost invisible pests. The underneath side of the leaf is the part of the plant they usually attack, a microscope being often needed to locate them at their work of destruction. The fumes of tobacco takes no effect on these minute little pests, but raw tobacco stems placed around and underneath the pots will check their ravages to a great extent. Cuttings of geraniums, etc., that are rooted in the cutting bed, or in boxes or pots, must be kept fairly moist at the roots, but should not be syringed overhead, as this induces "damping off" of the foliage.

Spiraeas that have started growth will require plenty of water at the roots. Remember when fumigating to lift these plants

down on to the floor, as tobacco smoke is very injurious to the tender foliage of *Spiraeas*. The last batch of freesia bulbs should be potted ; if kept later, small and inferior flowers are generally the result. How few of the tuberous rooted *tropaeolums* are seen in greenhouses. They make an ideal and unique plant for amateurs. *Tropaeolum tricolorum* is about the best variety, *T. jarratti* coming next in point of value. Light, fairly rich soil, with plenty of drainage, in a good sized pot and a moist atmosphere suits these pretty little greenhouse climbing plants admirably. A light wire frame or a small plant ladder about 2 ft. high, made of slats of thin wood, will make a suitable support for these delicate little climbers. The bulbs must be kept quite dry during summer, after the flowering period is over and the foliage shows signs of decay. Close ventilators in the greenhouse early in the day if ventilation is given at all.

WINDOW PLANTS.—Watering the plants and keeping them free of insects will be the principal features in the care of window plants. The leaves of *Ficus elastica* (India rubber) plants, and even the older leaves of *Calla lilies* and similar plants, will benefit by a sponging with clean tepid water once a week. Water of a temperature of about 50° is best both for watering at the roots as well as for applying to the foliage of plants. Keep as moist an atmosphere as possible prevailing in the room where the plants are. A steaming kettle, or open pot of water, will benefit the plants, and not jeopardize the health of the inmates of the house. Water the plants at the roots thoroughly, but only when needed. The latter very essential point in the care of plants can only be learned by close observation and experience—two of the best tutors for plant growers. Experience is sometimes costly, but its lessons are generally of an effective and lasting nature.

FLOWER GARDEN.—Finish preparing the

beds and borders ready for an early start in spring.

Spring flowering bulbs should be planted out at once if not already done. A good mulch of half-rotten strawy manure should be placed over the ground where bulbs are planted. This mulch need not be applied until frosts set in for good.

Protect all tender plants as required. Avoid handling or tramping on plants when they are in a frozen condition.

FRUIT AND VEGETABLE GARDEN.—There will be little to do in the fruit and vegetable garden now, except to finish up any arrears of work, such as digging, etc., and securing any late crops that are not as yet properly stored for winter. Additional covering for vegetables in pits will probably be needed. Avoid putting on too much covering, as the exclusion of air altogether, and the heat caused by over-covering vegetables, often cause a greater quantity to spoil and rot than if left comparatively open and unprotected. Cover up spinach that is to stand out all winter, with the trimmings of the raspberry patch. Fine brushwood, young suckers cut from fruit trees, or the coarse trimmings from border plants, such as perennial phlox, zinnias, etc., make a splendid winter protection for spinach. Manure or any close heavy material should not be used for covering spinach in winter, as it is certain to rot if covered up too closely.

Take up a few roots of parsley, cut off all the large outside leaves, and plant the roots thickly in soil in a large pot or deep box. Place the pot or box in the window or greenhouse and keep the roots well watered. Rows or beds of parsley left outside during winter should be protected as recommended for border plants.

Asparagus beds should have a good coating of well rotted manure for a winter covering.

HORTUS.

Hamilton.

CULTURE AND ADAPTATION OF THE DAFFODIL OUTDOORS.

SOIL.—The daffodil will thrive in any ordinary garden soil, but prefers a deep, rather moist loam. When the soil is of a dry sandy nature, it should be deeply dug, rotten stable manure should be added, and a potato or other crop taken off before planting. If this is not convenient, then place the manure at least twelve inches deep, so as to be out of the reach of the bulbs ; the manure is used not as a stimulant but as a sponge to hold moisture in the soil. The ammoniacal properties of manure are injurious to the daffodil, hence great care is necessary in the use of it.

Freshly dug soil should be allowed to stand vacant two to three weeks before planting, to allow the ground to settle down, otherwise the freshly planted bulbs are often drawn under considerably below their proper depth, and the bloom in consequence is weakened and retarded.

Best and safest manure to use is crushed bones or basic slag. This should be applied at planting time, and may be mixed with the soil and placed next the bulbs ; the crushed bones may be applied at the rate of 4 cwt. to the acre, or $1\frac{1}{2}$ oz. to the square yard, and basic slag may be applied in the same manner at the rate of 1 ton to the acre, or $7\frac{1}{2}$ oz. to the square yard. We recommend the basic slag in preference to the crushed bones, it being more reliable, and a good manure for all lands ; on very poor and dry sandy soils we recommend in addition sulphate of potash to be sprinkled annually in the autumn over the surface of the ground, or after planting, at the rate of 2 cwt. to the acre, or about $\frac{3}{4}$ oz. to the square yard. The potash not only increases the depth of color in the flowers, but also helps to hold the moisture in the soil, a con-

dition so essential to the perfect development of the daffodil.

In early spring, as soon as the daffodils begin to show above ground, the surface should be well broken with a hoe, to sweeten it after the heavy winter rains.

Planting and Lifting.—The best time to plant to obtain the finest flowers is from end of August and during September, although bulbs may be planted as late as Christmas with very satisfactory results. They may be left undisturbed for three years in ordinary good loamy soils, but on poor and light soils they are better lifted every two years, as soon as the foliage has died down, and replanted as early as is convenient. Never plant when the ground is wet and sticky, wait until it is dry or friable. Do not put silver sand around the bulbs of *Narcissi* except in the case of *N. corbularia*.

Depth to Plant.—The average depth to plant is from 2 to 3 inches, that is to say, a covering of two to three inches of soil, but not more. As the bulbs vary considerably in size, according to the relative varieties, the best rule to go by is the bulb itself, which should be covered with soil once and a half its own depth, measuring the bulb from the collar of its neck to its actual base.

Position and Grouping for Effect.—All daffodils prefer partial shade, although most of them will grow equally well in the open. In the flower border, to obtain the best effect, daffodils should be planted in large groups of irregular outline, each group or clump to contain one variety only ; avoid straight lines, circles and symmetrical designs. Masses of daffodils should always appear in the hardy flower border, where irregular and effective sweeps can be planted between the clumps of herbaceous plants which in their turn grow up and hide

as well as shelter the daffodil foliage while it is going to rest. In grouping, the season of flowering should be borne in mind, as the varieties bloom in succession from the end of February to the end of May, during which period a constant succession of flower is obtainable by a judicious arrangement.

Varieties specially suitable for naturalising in grass, woodlands, etc.—These are all free seeders, and will therefore spread naturally; they are mostly natural hybrids—*Abscissus*, *Achilles*, *Countess of Annesley*, *Golden Spur*, *Henry Irving*, *Obvallaria*, *Spurius*, *Thomas Moore*, *English Lent Lily*, *Princeps*, *Scoticus*, *Variformus*, *Albicans*, *Pallidus*, *Praecox*, *Moschatus of Haworth*, (very pretty in grass), and *Poeticus* of the Pyrenees. The varieties italicised we do not recommend for the cultivated border, as they deteriorate the second year, while in grass or meadowland they flourish.

Hints on Naturalising in Grass.—All daffodils may be planted in grass with perfect success. To produce the best effect the three groups should be kept separate; thus the *Star Narcissi* should not be mixed with the *Great Trumpets*, nor the *Poet's Narcissi* with the *Star Narcissi*. In arranging, make the breaks large and bold, scattering the bulbs over the ground broadcast with the hand, and dibbling into the ground where they fall. Avoid symmetrical lines or formal circles as far as possible, as these are never found in nature.

Method of Planting in Grass.—Take a stout wooden dibber (like a potato dibber) with a strong tread; make the hole in the ground about six or seven inches deep, and fill up with a good mixture of prepared soil consisting of two-thirds loam and one-third old leaf sod; into this press the bulb, and cover up the hole with some compost; this will give the bulbs a fair start, and success is sure to follow. In planting under trees, avoid places where the drip from the

branches is greatest, also where the main roots come close to the surface.

CULTURE INDOORS IN POTS, ETC.

Of the stronger growing sorts use three to six bulbs, according to size of bulb for a 4½ to 6-in. pot; of the small growing kinds, such as *N. Minimus*, *Nanus*, *Minor*, *Cyclamineus*, *Triandrus*, *Juncifolius*, and *Corbularias*, use twelve to eighteen bulbs for a 4½ to 6-inch pot. These small-flowered dwarf-growing species are most charming in pots or little shallow pans. The following may easily be had in bloom in January—*N. minimus*, *minor*, *nanus*, and *Cyclamineus*, and these may be mingled with *Chionodoxas*, as both bloom at the same period and produce a charming contrast. The *White Hoop Petticoat Narcissus* should be potted in almost pure sand kept well moist, and may be had in bloom shortly after Christmas.

If daffodils are wanted in quantity for cutting early in the season, plant thickly in boxes five or six inches deep, and only just cover the bulbs with soil, using ordinary potting soil. The pots or boxes should then be placed out of doors on a firm bottom such as a bed of ashes or a gravel path and be covered with six inches of ashes or cocoa-nut fibre. When the bulbs have filled the pots or boxes with roots and made an inch or two of top growth, portions should be removed indoors in succession, selecting first those which flower naturally early. First place in a cold frame or cool greenhouse, and when the flower buds are well advanced shift to a slow forcing house when they should have abundance of water and plenty of air. The plants should be kept as near to the glass as possible, and not allowed to get down from an insufficient supply of light or air. On no account should bottom heat be given.

A charming effect is obtained by growing daffodils in fancy bowls, simply using cocoa

fibre. Fill the bowls one-third up with fibre, then insert the bulbs and fill up nearly to the top with fibre. Give sufficient water to make the whole damp, and after that simply keep the fibre moderately damp. Should the material and bulbs lift owing to root action, simply press them down gently and evenly into the bowl. Daffodils may be grown successfully this way in a cool greenhouse or sitting-room window (by preference a room without a fire). They

should be grown cool, and not brought into warmth until the flower buds are coloring.

To obtain very fine blooms daffodils should be cut in a young state, just when the bud has well broken and is expanding from the spathe. Place in water and allow the flowers to open in a cool greenhouse or sitting-room. The blooms opened in this way are larger than those which develop out of doors.

—*Barr's Catalogue.*

THE FREESIA FOR WINTER BLOOMING.



FIG. 1951. GIANT BERMUDA FREESIA.

Pike, in *American Agriculturist*, give the following pointers for success with the freesia:

A rich, sandy potting soil is preferable, and a five or six-inch pot will accommodate half a dozen bulbs—one in the centre and the remainder in a circle about an inch from the side of the pot. Cover about an inch deep, water thoroughly and set out of doors

in some cool, shaded spot protected from rain. Cover over with straw or mulch of some kind to keep dark and cool while roots are forming, and examine frequently, giving water when the soil appears dry on top. As soon as the shoots begin to prick through the soil remove the mulch and gradually accustom to sunlight. Keep them out of doors and in full sunlight until there is actual danger of freezing, taking them into the house nights when necessary. They are not a tender plant and prefer a cool temperature.

When no longer safe to keep them outdoors during the day, place them in a sunny window of a fireless room and keep them there as long as the temperature does not go down to actual freezing. If necessary, they may be removed over night to a room having a fire, but during the day give a sunny, but cool window if possible. Water freely and as often as needed, and when the buds begin to show among the sword-like leaves, a light application of some liquid fertilizer may be given once a week. When the fruit flowers begin to open give an hour or two only of morning sun, then remove to a shaded location which will make the flowers more lasting.

BEAUTIFUL BULBOUS FLOWERS

• BY ELMER E. SUMMEY.

COMPARED with the almost universal use of our ordinary flowering plants, it is remarkable that the bulbous class should be so little appreciated. It is true that there is a constantly growing interest manifest, but this is not so great as the merit of this class deserves.

I wish to incite the reader to a greater degree of familiarity with these worthy plants. With them, the season of flowers may be extended from the first warm days of spring to the sharp frosts of autumn. The earlier flowers, modest though they are, from their welcome contrast to the winter's bareness, are more enjoyable than many of the gorgeous blooms of summer, when all nature is clothed in beautiful array.

Even now is none too early to begin the consideration of which to use, and the effects for which to aim. The bed should be designed and prepared in readiness for planting, by the last of September, or the first week of October at the latest. Where the Easter Lily (*Lilium Candidum*), are used, efforts should be made to get them planted during August.

With these bulbous flowers as with nearly everything else, the greater the care and preparation bestowed upon the soil in which they are to grow, the more satisfactory will be the return, although it is also true that many bulbs will do fairly well in the most neglected of situations.

With the combination of taste and ingenuity many pleasing effects may be produced by the use of the various brilliant hues, and taking advantage of the difference in habit of growth of the many desirable forms. Where one has grounds of sufficient extent, a good sized bed could be devoted solely to bulbous subjects, as a proper selection

would produce flowers almost continuously throughout the season. Such a bed should be arranged to present at different seasons certain particular effects; for instance, with the first signs of spring, the bed should appear as though wholly planted to crocuses in their various colors, together with snow-drops. The first should be planted in fancy outline designs all over the bed, the latter being used in several places for filling in the design.



FIG. 1952. PLAN FOR LILY BED.

The crocuses begin to bloom in March and April if the season is forward, and continue until the Hyacinth come to the front. The colors are white, blue, striped and yellow, and present a gay appearance. The bulbs should be planted about two inches deep and about four inches apart, when a thick line of foliage and flowers will be formed.

The Snowdrop (*Galanthus*) are delightful pure white flowers, both double and single, which are frequently in bloom before the snow is gone. Plant the bulbs about three inches deep and about the same distance apart, in clumps a foot or more across. Every three years they should be taken up and replanted.

After these earliest flowers are nearly

past, Narcissus, Hyacinths and Tulips of various colors should be coming on; the bulbs having been planted to harmoniously fill out the design formed by the crocuses, care should be taken to use the latter as well as the early sorts in order that the season may be lengthened until into June.

At this time Iris, of the various sections, English, German and Spanish, will be coming into bloom, while the Japan Iris will prolong the season with its gorgeous orchid-like flowers. The hardier and more robust of the Lilies should be distributed over the bed.

To furnish bloom through the later summer months, gladioluses and perhaps a few dahlias tubers might be used for the sake of variety. Then to close up a long season of bloom there should be set all over the bed, about a foot and a-half apart, plants of the Japan anemones, using both the red and white varieties; although they are not of a bulbous nature their low habit of growth through the summer renders them eminently fitted for such use, as they shade the ground somewhat, for the bulbs are not yet in the way of their well doing; late in the fall after nearly all other flowers are gone, the ane-

mones and dahlias should be staked while in bloom, then it will be an easy matter to find the bulb when they should be taken up in the fall, care being of course taken to disturb the other bulbs as little as possible.

Where it is not practicable to have such a bed as above outlined, a judicious planting of many bulbs may be made in the shubbery border, in any open spaces. If even this is not allowable from the lack of space, the earlier blooming kinds, including tulips and hyacinths, can be used in the same beds that summer-grown plants are grown. The bulbs can be dug up as soon as the flowers have gone, and planted in some out-of-the-way place for ripening until planting time in the fall, after the first hard frost.

In the formation of such a bed it is of course necessary that the soil should be deeply dug and well fertilized with old and well rotted manure. Early in the winter, after the ground is frozen, a good top dressing of manure should be given the bed, both for protection of the bulbs, hardy though they are, and the continued fertilizing of the bed, as this manure is dug into the surface the following spring.—*Our Country Home.*

SOME FINE BEGONIAS.

SIR,—I enclose you a photograph* of a group of Begonias in bloom, the size of the plants, and the amount and size of the bloom I think is seldom seen.

My reason for sending you the photograph is two-fold. First, I consider this variety of begonia the Queen of the family, and the readers of your journal will do well to secure a plant of this variety, which requires very little more care than a geranium, only it is not so hardy.

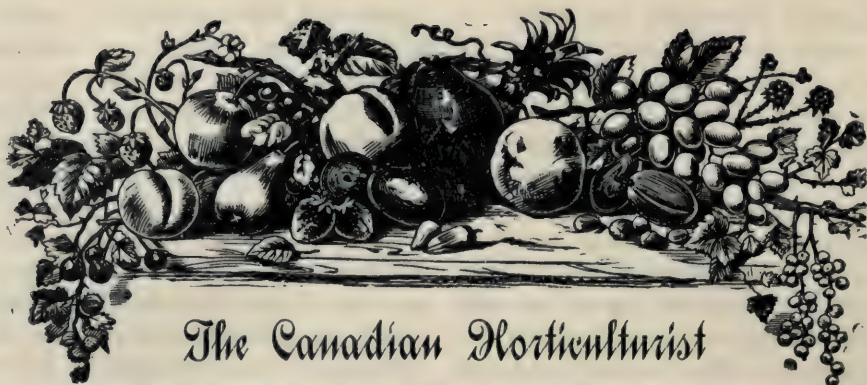
I wish to say here that I do not sell plants but the variety can be secured from the florists about here, and the next thing is to know the name, since it goes under four or five names, and I am not sure which is the

right one, and this my second reason for sending you the photo, thinking that some one of your readers might be able to give it its proper name.

I secured the cuttings under the name of *Pictaviensis*. I have been told that it came from the United States under two names, as follows,—*Velutena* and *B. Cuprea*. I see a cut resembling this one in English journals under the name of *Haegeana*. I also noticed a cut in the *Horticulturist* in the spring, by Webster Bros., Hamilton, resembling this variety. The question is, are they all one variety under different names, or are the varieties all different.

Niagara Falls South. R. CAMERON.

* See page 474.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.
SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

A GOLD MEDAL was awarded the Secretary of the Ontario Fruit Growers' Association for a collection of choice apples and pears forwarded by him to the Paris Exposition.

ELBERTA PEACHES FOR ENGLAND.—The steamer Trader, sailing October 5th, was rather late to carry Elbertas, which were just over. Nevertheless Mr. J. Wesley Smith, of Winona, put up twenty-five Wilson (bushel) cases of this variety for us to experiment with, and we sent them forward to Manchester. We have a good deal of confidence in the future of this variety.

A FINE SEEDLING PEACH.—To-day, Oct. 6th, we received from Mr. W. E. Wellington, Toronto, a very fine sample of a seedling peach grown in Toronto. It measures $3\frac{1}{4}$ inches in diameter and weighs over half a pound. The flesh is yellow, juicy and

excellent, and quite free from the pits. We know of no peach of its season to compare with it. We have finished Elberta, Late Crawford, Steven's Rareripe and Longhurst, and are now gathering Smock and Winter, but these latter are small compared with this fine sample.

A GRAND PRIZE for Ontario fruit, which was collected and forwarded by the writer to the Paris Exhibition, has been awarded the Dominion of Canada.

We have just received the following communication from Mr. Auguste Dupries, Secretary of the Canadian Commission, dated Paris, September 1st, 1900:

DEAR SIR,—I have much pleasure, by order of the Canadian Commission, to advise you that the International Jury at the Paris Universal Exhibition has awarded the Dominion of Canada for a collective exhibit of Horticulture, of which your exhibit of peaches, etc., formed an important part—a GRAND PRIZE DIPLOMA, and you will be entitled to receive a copy of the award.

The collection included all the fruit varie-

ties of fall and winter apples and pears, the following varieties of peaches: Elberta, Late Crawford, Wonderful, Lord Palmerston and Pride of Canada; and a set of bound volumes of the Canadian Horticulturist and Reports of the Ontario Fruit Growers' Association.

MESSRS. SIMONS, SHUTTLEWORTH & CO., Liverpool, cable: No fresh Canadians up in time for sale to-day. The market opened steady and continued so throughout the day. Good apples meeting with a strong demand.

Shipments last week from all parts will aggregate 48,000 bbls. to Liverpool, 20,000 bbls. to Glasgow, 22,000 bbls. to London (mostly from Nova Scotia), 300 bbls. to Hamburg, a total of 90,300 bbls., against 89,173 bbls. corresponding week last year.

YEAR 1900 APPLES AT PARIS.—At the request of the Hon. Sidney Fisher we undertook to forward two collections of Ontario apples to Paris. The first lot, consisting of thirty cases of summer and fall apples, with a few pears, went forward about September 15th, in cold storage as far as Manchester. In this collection were such varieties as Blenheim Orange, Alexander, Snow, Swazie, Cranberry, King, Wealthy, Maiden's Blush, St. Lawrence, Red Russet, Louise, etc. Our readers will be pleased to read the following cablegram, dated Paris, October 15th, from Commissioner Dupuis, one of Canada's representatives at the Exposition:

Fresh fruit in splendid condition. Four additional gold medals awarded Canada on Thursday. Prof. Drummond, from London, warns the department at Washington to wake up, as Canada leads in quality and quantity of products.

(Signed) Dupuis.

A FINE SEEDLING APPLE.—On the 6th October we received two fine seedling apples from Orillia, which originated on the farm

of Alex. McPhie, three miles out of town. Mr. J. Ryerson, who sends the apples, writes: "These apples average about the size of the samples, 3 inches in diameter, are entirely free from scab, not inclined to drop from the tree, bear a full crop alternate years, and a half crop the other years. The fruit keeps till about January. The tree is a chance seedling."

This is certainly a most attractive looking apple, almost equal to the Gravenstein in appearance, and of a season to continue in use from the time that variety is over in October, throughout November and December. In form it is oblate, with deep russeted cavity and large deep basin. The skin is straw colored background, almost covered with stripes and splashes of bright red. The flesh is white, fine grained, moderately juicy, of an agreeable, aromatic flavor.

This apple appears worthy of further notice by our fruit committee.

PRESERVING FRUIT FOR EXHIBITION.—T. Cranefield, in Wisconsin station report, gives results of experiments in preserving fruits for exhibition purposes, and retaining color and form. Sulphur fumes, corrosive sublimate, salicylic acid, and solutions of formalin in water were tried and found to be of little value. Mixtures of formalin and alcohol were tried, however, as preservatives for plums, with considerable success. A formula containing 2 per cent. of formalin, 20 per cent. of alcohol, and 78 per cent. of water was found to be best suited to the purpose.

"Plums put in the above mixture one year ago are at present well preserved. The fruit remains firm, and in the case of the lighter colored varieties the color is well preserved and the liquid remains clear. The color was not so well preserved in the case of the dark-purple varieties. The Japan plums are especially well preserved both in

color and form. Plums that were put in the mixture slightly immature cracked badly in every case, while those put in fully ripe remained without cracking. Currants, raspberries, and blackberries placed in the formalin and alcohol mixture mentioned above remained firm, but the color was not well preserved."

THE APPLE MAGGOT.—Card, of Rhode Island, has found orchard cultivation to go a long way in destroying this insect. Of 500 apples picked from a tree in grass, September 19th, where the ground had not been ploughed about 400 were wormy, while on the ploughed ground only about half of that number were affected.

THE QUALITY OF CANADIAN FRUITS is the subject of comment in *The Fruitgrower*, published in London, England, from which we quote as follows :

We are particularly pleased to testify to the quality of the Canadian fruits. They are far superior to the American, the flesh of the fruits are finer, more juicy and toothsome, whereas a good many of the Californian Newtown apples are hard and quite different to those sent from Canada. This is proved indirectly by the excellent prices which rule for best Canadian stuff, and we hope that the public will create a larger demand than ever for the finest of fruits which will be shipped us from the patriotic colony which sent such brave volunteers to uphold the glory of England in South Africa.

PERFECT SUCCESS IN EXPORT OF TENDER FRUIT.—This season inaugurates an entirely new era in the fruit growing industry. Until this present season there was no guarantee of temperature on shipboard, and the ship companies would not agree to keep the temperature within certain specified limits; the fruit might be cooked or it might be frozen, and all the same they would not be responsible. But this year this agreement has been made. Besides this, the Provincial Department of Agriculture has taken an intense interest in the success of this experiment and has determined that

it shall not fail. A car has been fitted up by Mr. Hanrahan, especially fitted for fruit carriage, holding exactly the number of cases required to fill the storage chamber on shipboard, and the storage on the Manchester Trader has been fitted up in the same way, so as to give cold with ventilation, which is so important to the best results. Two shipments have been forwarded in this system, and the third is to follow. We are happy to state that all these have arrived in perfect condition and have brought the most favorable criticisms from the English papers. Our Crawford and Elberta peaches in particular surprised them, for they could not believe that such elegant fruit could be grown in the open air. Complete reports of prices, etc., will be given later on.

OUR GLADIOLI EXPERT, Mr. H. H. Groff, of Simcoe, records victories for his Gladioli at London, Toronto, Montreal and New York. He has scored a victory over Mr. J. L. Childs in his own country that is most gratifying. "This stock," he writes, "he has discarded, it having been superseded by the more advanced work to be exhibited at the Pan-American in 1901."

OUR WINTER MEETING.—On invitation of the Board of Trade and the Brant County Farmer's Institute, the Ontario Fruit Growers' Association is to meet in Brantford on Wednesday morning, December 4th, at 9 o'clock. Mr. S. D. Willard, of Geneva, N. Y., Vice-President Westen, New York Horticultural Society; Prof. H. E. Vandeman, ex-U. S. Pomologist; Dr. Saunders, of the Dominion Experimental Farms; the Hon. John Dryden, and many others have been invited to be present and take part in the discussions, and topics of extreme interest will be discussed. Programmes may be had on application to the Secretary.

Errata.

Our Winter Meeting will take place on
December 19th and 20th, not December 4th
as stated on page 488.

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QUESTION DRAWER.

Gnarly Duchess Pear.

1188. SIR,—I send you by this mail a sample of Duchess pear which is all gnarled and distorted by little hard spots which grow in it at the skin. This pear, as you see, is about one-quarter the size it should be, showing the dwarfing effect of the pest. Will you kindly state through your columns what it is and what remedy can be applied. My Seckels and Duchess are both badly affected every year, and it is probable that other readers of the Canadian Horticulturist are bothered by it also.

London.

W. E. SAUNDERS.

Without doubt this pear is affected with stings of the curculio, a very common fault with the Duchess. Where this pear is grown upon rich land, well fertilized and cultivated, it overgrows all such injuries and is large, smooth and beautiful; but where weakly and stunted in growth, the fruit is usually small, knotty and worthless.

Watermelon Vines Failing.

1189. SIR,—Can you give me any idea as to cause of my watermelon plants wilting and dying? They grew vigorously and appeared quite healthy until they would cover a space of two or three feet square and then very suddenly dry up and die. Also please give remedy for same and much oblige.—Yours truly,

Iroquois.

A. B. CARMAN.

It is very difficult to account for the dying of your correspondent's melon vines without knowing more of the particulars. The trouble might be due to drought; but it is more likely that the vines were killed by little borers working in the roots. The striped cucumber beetle (*Diabrotica vittata*) which devours the foliage of the young plants, is very often found quite as injurious in its larval stage, when it is a slender worm-like creature and bores into the roots and stems of the plants. This is one of the difficult insects to contend with in both the larval and adult stage. Probably the most satisfactory method is to cover the melon vines with netting supported on a light

wooden frame. After the plants have reached the second or third leaf the covering will be unnecessary.

O. A. C., Guelph.

H. L. HUTT.

Sample Apples.

1190. SIR,—I send you by express four kinds of apples, marked 1, 2, 3, 4. Please name them. Harriston.

I. LIVINGSTON.

No. 1 is McIntosh Red, No. 2 resembles Cranberry Pippin, No. 3 resembles Seek; the other one we do not recognize.—EDITOR.

White Bougere Rose.

1191. SIR,—Is this rose hardy enough to live out of doors during winter?

Annapolis, N. S.

E. D. ARNAUD.

The White Bougere is a tea rose, needing good heavy protection here at Hamilton, and would no doubt need the same in Nova Scotia. We would prefer taking up the plant and potting it.

Hamilton.

WEBSTER BROS.

Pruning Plum Trees.

1192. SIR,—I have some young plum trees which bore fruit for the first time this season. The trees were purchased for "Weaver," but turned out a large and very fine yellow plum, not ripening until about the 15th Sept. The trees have grown into a very straggling shape, and seem to me to require pruning. Will you kindly let me know through your columns the best season and manner in which to prune them.

Yours truly,

ARMON BURWASH.

All fruit trees need pruning, although the plum and the cherry need much less than the peach, pear and apple. The pruner has two objects in view, (1) the form of the tree, (2) the equal distribution of bearing wood. It is evidently unwise to allow branches to cross one another or to grow lop-sided. A little wise cutting will regulate this. Then a common fault with fast-growing varieties, especially with the Japans, is the rank growth of young wood, which soon make

long branchless arms. These may be shortened back annually, with judgment, and the small branches resulting can be thinned as may seem necessary. The fruit is borne, for the most part, on small spurs, which are

formed along the shoots of wood from one to three years old; these therefore should be carefully preserved, and such young wood always encouraged as will furnish those for the successive years.

Open Letters.

Seedling Peaches From Jarvis.

SIR,—Herewith I send you two samples of a seedling peach that is now four years old, and fruited this year for the first time. The tree is a very vigorous grower, thick heavy leaves, and seems to be very hardy. It is now a tree of about twelve feet high and of good stocky growth. Last winter my Elberta and Crosby Early were entirely killed but this came out all right. This year, when in full bloom, we had on two nights very sharp frosts, and on the last one it froze ice $\frac{1}{4}$ of an inch thick, and yet I have forty-three very handsome peaches. The specimens I send you are one of the best on the tree, and one of the smallest. This year there is no small ones, they all seem nearly alike.

THOS. H. LEWIS, L. D. S.

Jarvis, Ont.

Plums in Cape Breton.

SIR,—I am sending herewith by parcel post samples of two varieties of plums, and will be greatly obliged if you will name them for me.

My plum trees were very heavily fruited this year, but the great storm which played such havoc in other parts of North America destroyed a number of my trees, and a very severe frost on the night of September 20th completed the work which the wind began. The greatest damage

was done the Lombards, which were very heavily laden with fruit, and, being weak and open in the crotches of the trunk and branches, were the first to succumb to the force of the wind, they also suffered the most from the frost. I notice that the blue kinds are not so badly damaged by the frost as the yellow ones. After several years' experience with Japanese plums I have come to the conclusion that they are not suited to this locality. I have several trees of Abundance which should have been bearing fruit for the past four years, but so far they have not borne a dozen plums. Burbank gave me a few very pretty samples, and while they are interesting they are not profitable. There is another Japanese variety, the name of which I have lost, which bore a fair quantity of fruit and ripened early—the first to ripen in my orchard—but the fruit, unfortunately, is of a very poor quality, tasting something like chokecherries. This latter variety is the only one of the Japs on which I have seen black knots. So far I have managed to control the knots by cutting them off and spraying the trees. I never pass a knot without attending to it. I keep a Waters' Tree Pruner in the orchard all the time, and with it I can reach any knot and cut it off, and placing it in my coat pocket carry it to the house and put it in the kitchen stove.

Yours truly,

D. S. McDONALD.

Glendyer, C.B., Sept. 24.

Our Affiliated Societies.

As the winter season of comparative leisure from the worry and push of fruit season is at hand, we hope there will be special activity among our horticultural societies. An autumn flower and fruit show in October, when all other fairs are over, and when the coleus and the geranium and other plants are being lifted for removal to their winter quarters is most opportune; or a chrysanthemum show in November, with winter apples and winter pears.

How the members do appreciate such an exhibition when money getting is not the object of the exhibition, only to help out the general good, and where the money is spent for the equal good of every member.

The Grimsby Horticultural Society has this year an exhibit of this character. It is an evening affair, just lasting from 7 to 10 o'clock, with orchestral music, and each member who has paid for 1900, or who pays in advance for 1901, is to receive a

collection of eight *Narcissus* bulbs, all different. Another floral show is always held toward the end of April, at which the spring plants are given away. We commend this plan to all our societies.

We clip from the reports of the various societies all the news we think will prove of general interest.

LINDSAY.—The directors of this flourishing and popular society offer to the members for 1901 the following advantages:

First—Each of the first one hundred persons who pays the sum of \$1.00 to the secretary as a membership fee for the year 1901 shall receive the following collection of bulbs and tubers, especially adapted to pot culture, for winter and spring blooming. The hyacinths are imported direct from Holland by Mr. E. Gregory, who will also supply the gloxinias. Mr. E. Maxsom, Lindsay's popular florist, will supply the cyclamen. The names of these men are a guarantee that the stock will be good.

- 4 Tuberous rooted Begonias, 40c.
- 5 Hyacinths in assorted colors, 50c.
- 2 Cyclamen in colors, 40c.
- 1 Gloxinia, 15c.

These are catalogue prices.

F. FRAMPTON, Sec.

NIAGARA FALLS SOUTH.—The Niagara Falls South Horticultural Society held a very successful fern exhibit in their hall, when the following contributed plants: Mrs. Land, Mrs. James Wilson, Mr. Robertson, our secretary; Mr. George Piper, florist, the village, and Mr. R. Cameron, the park. All the above showed beautiful well-grown specimens, and Mr. Cameron showed a handsome specimen of *Adiantum farlensis*, also a handsome begonia named Hagieana.

This society meets twice a month, and the directors are very attentive. The one night is for business, the other for the public, when papers are read on different subjects pertaining to gardening, where the public join in the discussions that follow. There have been some very able papers read by some of the lady directors lately. One subject was: Which were the best twelve window plants, and their reason for thinking so? Another was the best twelve annuals and why did they consider them the best.

A FRIEND OF HORTICULTURE.

PICTON.—The bulbs are here for the Fall distri-

bution. Each member receives twelve, consisting of 3 best exhibition Hyacinths, and 9 *Narcissus* Vox, 2 Orange Phoenix, 3 Double Daffodils, 1 Sir Watkins, 1 Horsfieldi, and 1 Golden Spur, amounting to 1236 bulbs for the 103 members on this year's list. If the members will kindly call or send to the Secretary's office, Mr. Walter T. Ross, they will receive their package of bulbs.—*Picton Gazette*.

KINCARDINE FLORAL EXHIBITION.—The annual exhibition of the Kincardine Horticultural Society was held on Friday, the 21st September, in the town hall. The floral display and incidentally the management of this year's exhibition was under the careful supervision of Mr. Joseph Barker, to whose enthusiastic and indefatigable efforts the success of the show must in large part be attributed. The directors assisted in arranging the display. The flowering and foliage plants made a very attractive exhibit and the many members of the society who, with their friends, flocked to enjoy the spectacle, were much gratified at the undoubted evidence of progress furnished by the exhibition. The Kincardine brass band was in attendance and beguiled the sightseers with sweet music. The horticultural society is doing a very worthy work in fostering interest in the garden and orchard and the local branch need not feel ashamed of the manner in which it emulates its larger sisters. The children's flower league made a splendid display. The president of the society is S. W. Perry, the secretary Joseph Barker.

TORONTO JUNCTION.—The Toronto Junction Horticultural Society held their first annual flower exhibit in the auditorium of the High School on Saturday, September 15th. The flowers open to competition were from seeds donated to the Public Schools by the society, and were asters, zinnias, phlox, nasturtiums and petunias, in all of which there was a creditable show. There were also many pretty house plants lent for the occasion. Mrs. Perfect contributed a fine spray of clematis paniculata and palms; Mr. Arch. Gilchrist showed a handsome specimen of the new chenille plant in full bloom. Rennie Bros. furnished a pretty collection of asters, dahlias, petunias and gladioli. Mr. Gilchrist also had a pretty collection of greenhouse plants on exhibition, and a very handsome fern was shown by him. Miss Macmillan, Mrs. Geo. Heintzman and Mrs. Cook were also contributors of pretty plants. The attendance was all that could be expected, and in the evening the room was crowded. Temple's orchestra furnished music during the greater part of the exhibition.

THE FOREIGN MARKET REPORTS.

No doubt the bulk of our apples, of ordinary grades up to No. 1, or 2½ inch apples, must always be sold in barrels. It would not pay to expend the labor and money upon them which would be necessary to put them up in cases, and even if they were boxed they would not command any better price than the same stock in barrels. But extra grades of apples, put up in special packages, will command special attention and make such a reputation for high grade Canadian apples as has already been made for her cheese by similar methods. The following quotations are for ordinary first or second grade apples such as are usually exported in barrels :

Mr. Eben James, of Toronto, representing Woodall & Co., Liverpool, writes Oct. 12th :—

A decided change for the better has taken place and the outlook which was blue some time ago has been reversed. Present cables, though high, should not be accepted as a criterion of future prices, though they show that British buyers are appreciating the good quality of our fruit and we may anticipate a brisk demand which even at considerably lower prices will show a good profit. Also, unlike last season, the war is now practically over and there should be nothing to spoil the sale of what is, in a measure, a luxury.

There are other reasons which brighten the outlook. There have been numerous enquiries from the U. S. for our apples and a few contracts made, showing that their crop either in quantity or quality is not what was expected; also the report we circulated about the English crop of hard fruit being ruined, is undoubtedly true, as prices show; and the storms here did great damage and reduced our crop materially.

The apples are held practically by a few hands in Canada and our advice to our friends is not to be induced to sell out their holdings as we believe the prospects are bright and there is every reason to expect that much of the money lost last year will be made up. If you are bound to sell here, kindly advise me before doing so.

Woodall & Co., Liverpool, write Sept 29th:

The season's arrivals to date 24,040 barrels, have consisted of early varieties, and during the past fourteen days a fair quantity of Baldwins have been shown, but were of course green and immature, and have come into competition with the English crop which is a large one, and all our

markets are glutted with them. It is therefore a matter of little surprise that similar class fruit such as is now arriving from America and Canada are not sufficiently superior in quality to induce satisfactory prices, although there have been occasional exceptions. Each arrival is showing some improvement, and at the same time the glut of home production is disappearing, so that it may confidently be expected that in a short time imports will be of good quality and condition, and prices paid at recent sales would suggest that even now the trade are giving American and Canadian fruit the preference.

PRICES AT LAST SALES.

	Firsts	Seconds & Slack.
NEW YORK—Baldwins.....	11/6 to 14/	8/ to 12
Kings.....	15/ to 21/	12/ to 14/
BOSTON—Baldwins.....	10/ to 12/	8/ to 10/
{Ramshorns, }	11/ to 14/9	8/ to 10/
{Hubbardston }		
CANADIAN {Gravenstein }	14/ to 19/6	12/ to 14/6
{and Blush }		
Greenings...	11/6 to 14/6	10/ to 12/6
Snows.....	15/ to 16/6	13/ to 14/6
Colverts.....	12/ to 14/6	11/ to 14/

Wasty sell 2/ to 3/ under quotations for slack.

James Adam, Son & Co., write September 9th :

It is now more than a month since the first apples arrived from your side, and while the quantities were very small at the outset they have gradually increased, the total to date being 24,921 barrels, as compared with 41,195 barrels for the same period last season.

Needless to say, there has been great irregularity in the samples, some of the fruit being of only indifferent quality, as well as faulty in condition, still on the whole we should say that for first arrivals they have been fully up to the average, and from present indications we are inclined to hope for something good in the matter of quality later on.

New York up to the present has been our largest contributor, but it is doubtful if this will remain so for long, as the crop in the New England States is said to be very large, and in all probability we shall be getting more important consignments from this quarter very soon. So far the New York Baldwins have been wanting both as regards size and color, and although future arrivals may, and no doubt will, show an improvement as to the latter, the former defect is less certain of being remedied, indeed we hear already that the variety generally promises to run small this season. Of course with so many green apples of English growth available, our market has not warranted high prices being obtained for this fruit, still there has been a fairly good outlet at 7s. to 13s. 6d., while Kings

have sold up to 21s. 6d. per barrel, which it must be admitted is very encouraging.

From Boston the most appreciated variety has been the Ramshorn, which, owing to its good color, met with good enquiry, at prices ranging from 11s. to 14s. 9d, though other varieties where at all good have also met a ready outlet, Baldwins making from 6s. to 12s. 8d., and Hubbards 10s. to 13s 3d. per barrel.

Canada has sent some good Gravensteins and Colverts, the former of which sold from 16s. to 19s. 6d, and the latter 11s to 14s. 6d—both very creditable results—but more surprising still, perhaps, are the prices paid for Greenings, which sold yesterday from 12s. to 14s. 6d. per barrel.

From these results it will be seen that although English apples are plentiful, there is at all events an outlet for fruit from your side, in fact, as we have already pointed out, American and Canadian varieties when of good quality and attractive appearance, always command attention no matter how plentiful the home crop may be, and from present aspects the outlook is much more favorable than it appeared to be at the beginning of last month when we issued our prospective report. Of course great care will have to be exercised in the selecting and packing of fruit for export, but in the interest of all operators, and especially those who experienced losses last year, we trust the season after all may not prove altogether unremunerative.

Messrs. Garcia, Jacobs & Co., London, cable :

Our market is now ready for some of those good Canadians. English fruit is not of as good quality as it promised to be earlier in the season. We look for an active demand at fair prices, so long as receipts are not too large. While the above prices are accurate market quotations, shippers will do well not to expect a continuance of these high figures after the present exports are very materially increased.

Messrs. Simons, Jacobs & Co., Glasgow, cable the following quotations for good sound apples under date of October 5th :

Baldwins, Spies, Spitz, Cranberry Pippins, Colverts, ruled from 13s. to 15s. 6d. ; Kings, 18s. to 23s. ; Greenings, 14s to 17s. ; Ribstons, 12s. to 14c. ; Gravensteins, 19s. to 19s. ; Jenetings, 11s. to 14s. A few extra fancy apples made a little more money. Common grades and fruit out of condition ruled from 2s. to 4s. below the lowest quotations. The demand is very active for good well-packed fruit.

The quality of the Canadian apples this year

thus far has been so good that notwithstanding large supplies of English and continental fruits, early Canadian apples have met with an extraordinary demand.

Mr. W. N. White, auctioneer for Messrs. Dennis & Sons, write :

England, France, Germany, Holland, Belgium and Italy have the largest crops in my recollection.

English crops, being so large, lack quality ; present prices are very low, the lowest I have ever known, and all kinds of cooking fruit must be very cheap all the season. Good dessert apples are not so plentiful, and any pretty colored stock at a moderate price should sell freely, provided the supplies are not too large. Prices, of course, must depend on the supplies, and if you send us as many as you did in 1896, you will not even get 1896 prices. England only wants your best colored fruit ; small green, or any poor stock, must on no account be sent. Consignors must not forget that the charges of freight and expenses are the same on a barrel of rubbish as on a barrel of best selected fruit.

I notice in some of your papers that, because a few samples were sold at the Exposition in Paris at fair rates, some folk think there will be a market in France. Such is not the case ; she has the largest crop for years, all very healthy, and she cannot find a paying market. I dare maintain that apples consigned to France would not make freight and expenses.

Germany has enough apples for cooking purposes to last her till mid-summer, 1901. She will only want a short supply of red fruit, certainly not so much as in 1896. Do not be misled by those who have their own special "axe to grind."

Italy has an abundant crop, and will export a large quantity of good apples to Germany ; no other market is open to her this year.

Messrs. Dickhuth & Sohn, Hamburg, write :

In regard to the prospects for the sale of apples from your country in our market, we can repeat that we expect a ready sale for the first grade red keeping winter fruit, but for this first grade only.

We have a very large home crop of apples, which are of inferior quality compared with your best stock, and this will enable us to sell your best stock all right, but for seconds we shall have no demand whatever.

The apples you ship must be of first grade all through the barrel.

Do not begin shipments before the second part of October.



OUR BOOK TABLE.

HEDGES, WINDBREAKS, SHELTERS AND LIVE FENCES. A treatise on the planting, growth and management of hedge plants for country and suburban homes. By E. P. Powell. Illustrated, 12mo, pp 140, cloth. Orange Judd Co., New York. Price 50 cents.

A compact, practical handbook on the management of hedge plants and hedges has long been needed, and the demand for such a work is rapidly increasing. This neat and attractive volume is giving just that information which is needed by those who live in the country or who own suburban residences. It gives accurate directions concerning hedges; how to plant and how to treat them; and especially concerning windbreaks and shelters. Anyone who will follow the directions given will be able to avoid those errors which make most of our country places more or less haggard with half-dead orchards, shelters and hedges. It discusses fences briefly, as these are rapidly giving way to wire fences; but it enlarges on windbreaks, which are becoming of increasing importance every year. The illustrations are not only photographs cover-

ing the whole subject, but include numerous ground plans for laying out suburban lots and

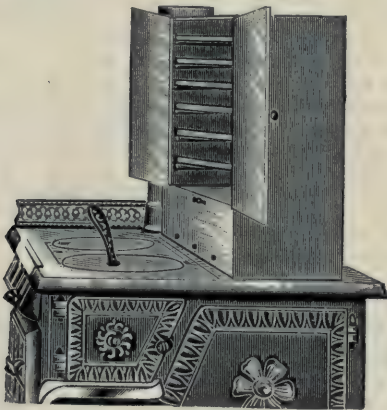
CATALOGUES.—Simmer's Annual Seed Catalogue, Toronto, 1900; free to patrons.

CATALOGUE CHAMPION FRUIT EVAPORATOR AND DRIER, for the evaporation of all kinds of fruits and vegetables. Manufactured by the G. H. Grimm Manufacturing Co., 84 Wellington street, Montreal, Que.

HOME MADE CONTRIVANCES for farm and garden, dairy and workshop. How to make 1,000 handy appliances and labor saving devices needed on the farm or about buildings, including racks, mangers, stanchions and troughs, vehicles, rollers, small tools, lawn appliances, wells, pumps, stump pullers, etc., fences of every description, hurdles and portable fences, bridges and culverts, gates, hinges, hedges, etc., etc. 350 pages, 750 illustrations. Orange Judd Co., New York, 1899.

CALENDAR OF QUEEN'S COLLEGE University, Kingston Canada, for the year 1900-1901. George Y. Chown, B. A., Registrar.

CHAMPION FRUIT EVAPORATOR



Dries all kinds of Fruits and Vegetables Produces a superior quality of clean, white fruit. It is made of galvanized iron, is fire-proof and portable.

FIVE DIFFERENT SIZES.

No. 0—For use on any cooking stove.

Nos. 1 and 2—Complete evaporators for home use. Also good bakers.

Nos. 3 and 4—Complete evaporators of sufficient capacity for market use.

Catalogue and prices on application

THE G. H. GRIMM M'FG. CO.,

84 Wellington street, Montreal, Que.

WINTER.—This is a fine looking peach just beginning to ripen, October 6th. Last year it hung a long time after the Smock was gathered.

STAMMERING

CURED TO STAY STAY!

LINTON ORTHOPHONIC INSTITUTE

Brockville, Can. High Class. Fully endorsed. Established 1891. The only school for the cure of all phases of defective speech, requiring no fee until cure effected. Open always. Stamp for Prospectus.

CHARLES MAJOR'S NEW BEAR STORIES.

The latest work of the author of "When Knighthood was in Flower" has been secured by The Ladies' Home Journal. As would be expected, it has to do with adventure—the experiences of some frontier children. There is a childish romance woven into the stories, and they will have a keen interest for boys as well as for their elders. Under the heading of "Blue River Bear Stories" Mr. Major's serial will begin in the October Journal.

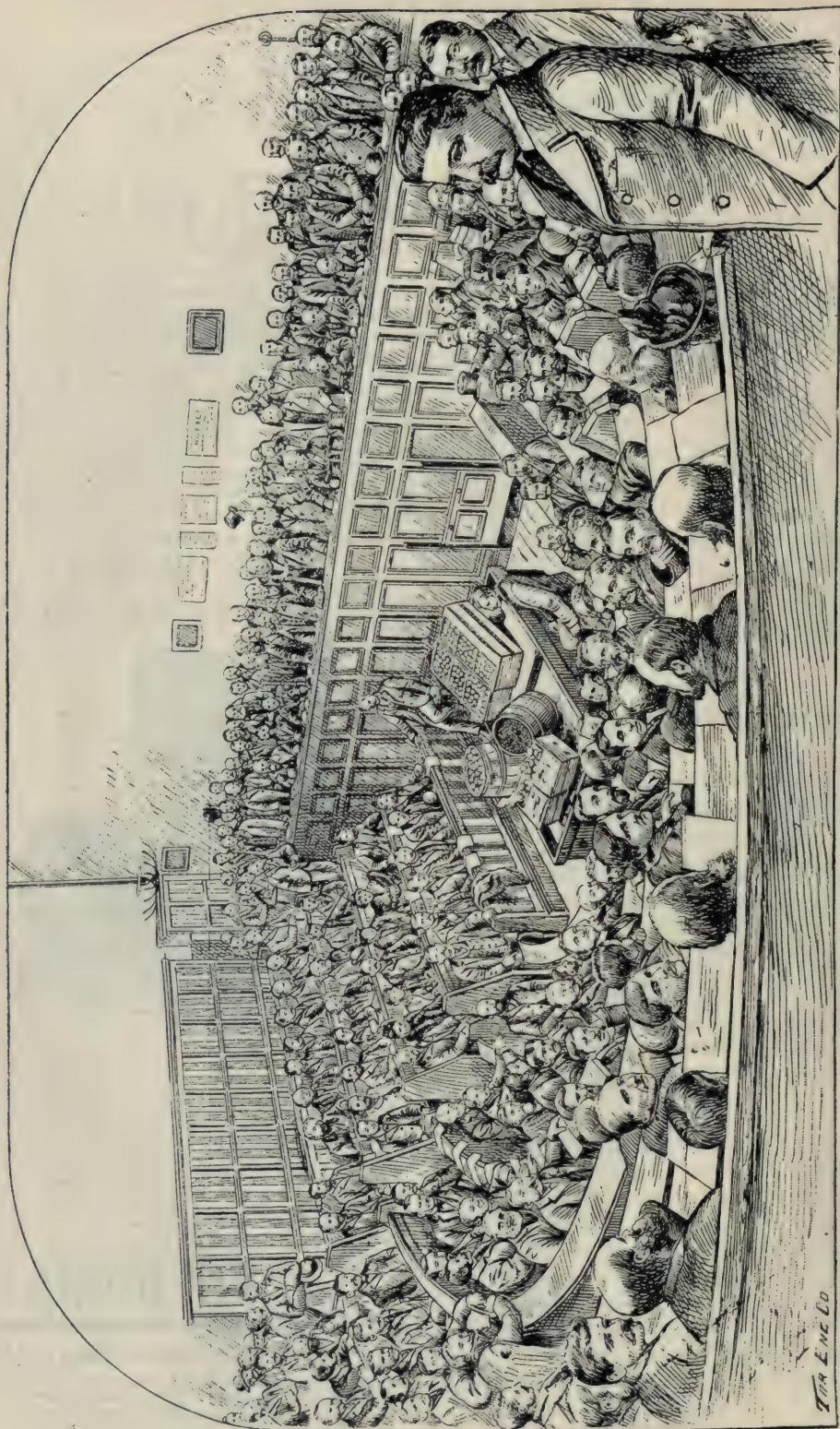


FIG. 1953. THE MANCHESTER FRUIT MARKET.

THE CANADIAN HORTICULTURIST



** DECEMBER **

SUCCESSFUL EXPORT SHIPMENTS OF TENDER FRUITS.

OUR frontispiece will be an interesting one to Canadian fruit growers, showing, as it does the Manchester sale room for fruit. Here are collected merchant buyers from various parts, eager to purchase supplies for their special trade. Our goods are separated into lots according to grades and shipper's marks, and samples of each brought into the sale room and opened. If a brand is known as reliable, nothing further is necessary, but if unknown, or known with suspicion, the packages are emptied out on the table for inspection, and if found fraudulent, the whole lot is sold as such. The fact that so much of our barrel fruit has been found unreliable has had a most disastrous effect upon its selling price in Great Britain, and it is only by establishing our trade on a new basis with reliable grades, that we can expect to gain that popularity which our goods so well deserve.

This object has been before the Ontario Fruit Growers' Association for some years past, and the writer, being secretary of this Association and of the fruit experiment

stations of Ontario, has been asked to act in this particular for the extension of our fruit markets. On referring the matter to the Minister of Agriculture for Ontario, he expressed his willingness to aid us in every way possible. The export of peaches, pears and grapes being more vital to Ontario than to any other province, it was natural that our province should now exert herself in her own interests and carry to a successful issue the work so well begun in an experimental way by the Dominion.

Last year the writer was commissioned by the Hon. John Dryden to forward a few hundred cases of Ontario grown grapes to Manchester, to test the English market for our best varieties. The varieties selected were the Red Rodgers. They were packed 5 lb. veneer baskets, four in a case. As reported in our Fruit Experiment Station report, they were received in Manchester with great suspicion, and at first no one would purchase them at any price, but by and by the costers bought them gingerly and began selling them on the streets. Then they came and paid double the price

for the remainder of the stock, and our consignees, Messrs. B. W. Potter & Co., said that if we could have continued the shipments regularly with each succeeding steamer, they could soon work up a trade for Canadian grapes at a probable paying price; this firm offering them by private sale and not by auction.

This season Mr. Dryden extended the experiment to include other fruits, and fitted the "Trader" of the Manchester Line with

verton, W. H. Nelles, C. W. Van Duzer and S. M. Culp. In order to secure the cold storage space of 1,600 feet, it was necessary for us to combine and agree to fill it every time the Trader sailed. The apples were graded to uniform sizes and packed in half bushel cases. They arrived in Manchester in fine condition which proved how complete a success Hanrahan's system of refrigeration is, for the Astracan ripens in ordinary conditions a few days after it is



FIG. 1954. WILDER GRAPES AND KIEFFER PEARS PACKED FOR EXPORT FOR THE ONTARIO DEPARTMENT OF AGRICULTURE.

a cold storage compartment especially adapted for carrying fruits; he also fitted up a refrigerator car, after Hanrahan's patent, for the especial purpose of carrying fruit in perfect condition from the point of shipment to the steamer.

The first Trader shipment made was chiefly Red Astracan and Duchess apples, and was forwarded on the 25th of August. The following fruit growers united in making up the shipment, at their own risk, viz.: L. Woolverton, A. H. Pettit, E. J. Wool-

picked. Owing to the great crop of early apples in Great Britain, these perishable apples sold at 60 cents a case.

There were also some bushel cases of apples which sold for \$1.40 each, and some Wilson cases with fillers which sold for 96 cents each. One Wilson case containing one hundred Hales peaches sold for \$1.46.

The total proceeds of this shipment was \$438.91, a satisfactory amount were it not for the unusually heavy charges, which are considerably advanced this season owing to

the South African war. The following is a detailed list of charges ; Freight paid Manchester Liners, \$327.51; Manchester ship canal tolls and wharfage, \$13.96; cartage and portorage at docks and re-delivering, \$5.74; sampling and taring and clearing, \$2.48; marine insurance, \$2.52; market portorage, \$11.86; brokerage at 5 per cent., \$21.94; cable, \$3.90; amounting in all to \$290.01. This left only \$148.90 net, or a little less than we could have got for the same goods at home. However, we had the satisfaction of having our fruit reach the market in the very best condition, and of establishing a reputation for our fruit that will be worth millions to our fruit growers in the immediate future.

The following extracts from letters from the consignees, Messrs. B. W. Potter & Co., Manchester, regarding this shipment will be of general interest :

" Manchester, 12th Sept., 1900.

" Sir,—The shipment ex-Trader landed in capital condition and, if it had not been an extraordinary year, you would have had a very good return; as it is we have been getting good prices compared to English fruit, which has been almost given away. We have not completed sales yet, but hope to wire you directly with the net result. Now we have pleasure to report on packing. Apples will do very well indeed with wax paper only, no moss or shavings, and packed only in bushel cases—half bushel cases will not pay you so well. Pears in paper and shavings and packed in halves are best. They took much better than the apples and we could have disposed of more. The case of peaches arrived in splendid condition but would not keep and was sold at once realizing \$1.46. Buyers do not like packages which they have to return. Some of the cases were packed too tightly and the fruit accordingly bruised. This is a mistake which we think might be avoided.

" The marking on the cases leaves room for improvement. Everything is done in such a hurry in our market that it is a distinct disadvantage having to examine a case carefully to find out the variety and grade of contents. We would suggest that you use the plain end of the case for mark, variety and grade, simply putting in bold type say

L. W. KING
87 A No. 1

leaving off all other lettering. You might use different colored ink for pears and apples."

" Manchester, 17th Sept., 1900.

" Sir,—We cabled you to-day as follows:—Thirty-six net. Pears 97c., bushels \$1.46, halves

61c.; Wilson's \$9.74, average gross proceeds, which we meant you to understand as thirty-six pounds net balance, the pears bringing 97c., bushel boxes apples \$1.46, half bushel apples 61c., and Wilson's patent cases 97c., with box \$1.22, average price. It is a very disappointing return we must admit, but considering the state of the market, the price is a good one. We send you the Shipping Gazette of the 15th inst., and draw your attention to page 10, from which you will see American apples have been fetching from \$1.22 to \$2.44 per barrel.

" The writer was present whilst the steamer Trader unloaded, and entered the cold chamber, finding it *perfectly dry*, and he considers that the fruit *could not have been carried better, the new arrangement of the brine pipes being a splendid improvement.*

" In nine years out of ten the return for fruit would have been splendid, and it is most unfortunate that you should have fallen across the tenth year.

" Your own fruit, on the whole, carried best, and we think you must have picked it in better condition, especially the pears."

The second shipment was made by the steamer Commerce, leaving Montreal September 15th, just in the nick of time for Bartlett pears, but too early for Elberta peaches. The fruit was kept in cold storage while the carload was being made up, and carried by the Hamrahan automatic refrigerator car to Montreal, and thence transferred to the cold storage chamber of the Commerce. There were in all 882 packages, and the total net returns were \$487.67.

The following is a detailed account sales of this shipment, showing the shipments of each shipper, and the selling price of the same :

Z. W.	
1 case tomatoes	61
496 cases Bartlett pears, averaging 74c., \$1.95	\$464 13
56 cases apples, averaging 97c., \$1.25	62 82
5 " peaches	13 39
A. H. P.	
65 cases pears	59 13
25 " apples	14 32
11 " peaches	22 40
E. J. W.	
118 cases pears	122 74
B. B.	
110 cases pears	93 50
	\$853 04
Charges	365 39
Net proceeds	487 65

Mr. Peter Byrne, Ontario Government Agent at Liverpool, writes concerning this shipment, October 5th, 1900:

"Sir—The Hon. John Dryden having informed me that you would like to hear from me regarding the condition of your shipment of fruit on the S. S. Commerce, I am glad to inform you that I found it very good indeed. The fruit was very cold, and some of it very 'sweaty' when opened, but otherwise it was all right, every case inspected being sound.

"The Elberta peaches were rather green and

Those shipped by D. J. McK. were to a considerable extent damaged, having, perhaps, been packed over ripe. Messrs. Pettit & Son's lot (two grades) were in about the same condition, a good many in some of the cases being bad, and others being all right. Part were packed with wool and paper, and part with paper and shavings. I am inclined to think the wool packing is of doubtful benefit.

"I find that some experienced fruit dealers here have no fault to find with the present modes of packing, and would suggest no alteration whatever.

"Mr. Potter secured the temporary use of a fine



FIG. 1955. BUSHEL BOXES OF APPLES, HALF BUSHEL BOXES OF PEARS, AND PACKAGES OF GRAPES, PACKED FOR EXPORT FOR ONTARIO DEPARTMENT OF AGRICULTURE.

immature looking, and consequently less attractive than the Crawfords sent by Messrs. Pettit & Son. Some of these had probably been a little too ripe when picked, as a good many of them were in various stages of decay when opened. Whether the wool used in packing had anything to do with it I could not say. But the majority of the Crawfords were in perfect condition, and have been much admired for their beautiful and attractive color.

"Your case of tomatoes turned out sound but very tender in the skin, and soft. It is well you did not send any considerable quantity, as the market is glutted with foreigners.

"The pears sent by E. J. W. all turned out well.

show window in Manchester for a display of the fruit; and I have done the same here. I brought from Manchester a Wilson case with a careful selection of pears, apples and peaches, but, finding these were too few to be effective, I got four half-cases from Mr. Shuttleworth, in Liverpool, who is the consignee of the other shipment ex-Commerce, and with their aid got a good and effective exhibit for the show window of the C. P. R. offices. It is attracting an immense deal of attention. I invited all the Press of the city to come and inspect and taste the peaches, which, being a great novelty here, form the most attractive part of the display. The great mass of the people here actually think that they are grown

under glass, and are astonished, if not incredulous, when they learn that they grow in the open air like pears, apples, etc.

"One of the wholesale salesmen in Manchester entrusted with the disposal of your fruit, told me that he had sold 20 cases of pears in an hour, and every one of them was opened and found in prime condition. The price was \$1.22 per half bushel case.

"This is a very abundant fruit year in this country, and glutted markets have kept the prices low. I will send you papers containing press notices of our exhibit. If you are sending any grapes with the next shipment, I intend to make a public display of them also, and will urge Potter to do the same in Manchester."

The following letter from Messrs. Potter & Co., the consignees, is also of interest. It is dated Manchester, October 6th, 1900 :

"Sir,—The major portion of your Commerce shipment has been sold, the Bartlett pears fetching from 97c. to \$1.22 a case, with some wasty ones at 49c., and a few absolutely worthless. These latter we think must have been against the brine pipes and the temperature has been too cold.

"Tomatoes will not pay for sending; they are too cheap here. Your box fetched 61c. The sixteen cases of peaches have sold for \$1.46 to \$3.17 a case, but a very large proportion of the fruit was bad. Details of all marks to follow. The bushel cases of pears were too large and don't sell well.

"Peat moss will not do for packing. It does not keep the fruit well and certainly looks badly when cases are opened. Keep to the fine shavings and paper. We enclose sample of paper the Californian pears are wrapped in and they carry splendidly. The wax paper also does well and is good looking.

"The peaches seem best packed without wadding. The Elbertas are soundest but the Crawfords take much better; they are so showy. Some fruit has been picked too green to ripen.

"The apples of course came splendidly. Please send in future full details of marks, grade, variety and size of package. We had great difficulty in sorting out en quay. A good consignment arriving a couple of weeks before Xmas would do splendidly we feel sure."

Under date of October 10th, Messrs. Potter & Co. write :

"Sir,—We cabled you to-day 'Net 105.' This is the approximate net proceeds of the 882 packages landed. The charges have not all come in yet, but we do not think the actual result will vary much from this figure.

"We are sorry the result does not equal the 97c. you wanted to make the shipments pay, but you have certainly made more by this fruit than any other people in the market. More than this, you have given the fruit a good standing and the public like it and will ask for it again, so that the result cannot be measured merely by the cash return."

The following is an extract from the "Journal of Commerce," Liverpool, dated October 8, 1900,—

"The enterprise of our Canadian cousins has for many years been a factor of considerable importance in regard to the trade of this country, for Canada has year by year been sending supplies of various kinds in ever-increasing quantities. For some years past attempts have been made by Canadian fruit growers to find a market for their surplus produce on this side of the Atlantic, their efforts meeting with varying success, but at last there is reason to think the time has come when Canadian grown fruit will compete on exceedingly favorable terms with the home grown article, and this not only in the hardier class, but also in fruits of the most delicate description. When the earlier shipments of fruit were made a few years ago the result was almost sufficient to give the project a death-blow, for the conditions under which the produce was carried were not at all such as to improve the fruit during its passage across the Atlantic. The butter man of Montreal required a temperature of 22 degrees for his produce, the beef exporter wanted 28 degrees, the fruit could not do with anything under 36 degrees nor much above 40 degrees. Consequently when all these classes of goods were placed in the same cold chamber on board the steamer, some portion of the consignments had to suffer, and the fruit, fared the worst of the lot, for when it was opened on this side and exposed to the warm air of this country, the tissues of the fruit burst and it wasted away within 24 hours, the experiment thus ending in failure. The matter was reported to the Canadian authorities, and after some further experiments, through the efforts of Hon. Sydney Fisher, the Dominion Minister of Agriculture, shipments were made in steamers which provided the temperature requisite for the proper carrying of fruit, the produce being carried in a special chamber cooled by the Linde system. The improvements have, of course, been gradual, and success came very slowly, but it is thought now that the general principles under which fruit can be carried to the best advantage are pretty well known, and that only in minor details can the system be improved. One of the important points connected with the carriage of this class of produce is the necessity for keeping it at a temperature which, while sufficiently low, is not allowed to vary to any extent. Considerable difficulty has been experienced on this point, for the best-meaning engineer may temporarily neglect this portion of his charge, and the mischief is done, in most cases beyond repair. A thermograph, or self-registering thermometer, is now provided for each chamber fitted for the carriage of fruit, and this provided a record of the actual changes of temperature during the voyage; thus it can be seen at a glance whether the fruit has been carried under proper conditions or not.

"A recent shipment of fruit by the Manchester Commerce arrived in this country in the pink of condition, and samples have for the past week been exhibited at the office of Canadian Pacific Railway, James street. There passers-by were

astonished to read that all the fruit exhibited, which included some of the finest peaches imaginable, was grown in the open air. One fancies the Canadian climate to be more or less like a severe Christmas in this country, but during the summer season the land is a veritable garden, where flowers and fruits, which it is only possible to produce in hothouses in this country, are to be found in every garden. The fruit sent by the Manchester Commerce is grown at Grimsby, Niagara District, Ontario, a place famous for its orchards and vineyards; and here every description of fruit, including the finest Williams and other varieties of pears, and many kind of peaches, are grown in the open air. Those on view at the offices of the C. P. R. on James street were a continual source of attraction to passers-by, and some were so carried away by the exceptional appearance of the fruit as to be induced to enter and attempt to purchase what was only exhibited as samples. In Canada the fruit is carefully picked, the peaches when almost ripe, the pears and apples somewhat earlier, and as carefully packed, being forwarded by rail to the port of shipment in refrigerator cars. These cars are specially fitted for the purpose, and, being properly attended to, the fruit is carried through to the steamer in excellent condition. Of late owing to the splendid arrangements on most of the newer boats crossing the Atlantic, the carriage to this country has been perfectly satisfactory, and the result is that the Canadian growers have been able to put their fruit on the English market in perfect condition. It has been well in demand wherever offered, and has been sold at prices which equal, when they do not exceed those paid for the more hardy, but less juicy and delicious, fruits from California. Orders have already been received for large quantities of Canadian fruit, which is only being shipped. This includes some consignments of Canadian grapes, which will be put on the market in the course of the next two or three weeks."

Shipment No. 3 was by the steamer *Trader* again, sailing October 5th, but this was too late a date for peaches or Bartlett pears, both of which were in season for the previous shipment of September 15. Added to this the ice at the Grimsby storage gave out, and the weather came on exceedingly warm while we were packing. Under these unfavorable conditions we thought best to send forward only about sixty cases of peaches, which arrived in Manchester quite over ripe, and the same was the case with the few cases of Bartlett pears, but the principal part of the shipment consisted of fall apples, such as Ribston, Fall Pippin, Blenheim and King, which sold at from \$1.50 to \$1.75 per bushel box; and of such pears as Duchess, Louise, Anjou and Sheldon, which

also arrived in fine condition and sold well.

There were also some red and black Rogers grapes, about two tons, sent forward in the storage chamber. These arrived in fine condition, but, as usual, failed to bring paying prices.

Mr. P. Byrne, Ontario Government Agent, writes to the Department of Agriculture at Toronto, on the 24th of October, as follows:

"The grapes, speaking generally, were in very good condition. An occasional sample was slightly wet or mouldy, but, on the whole, they looked attractive and sound.

"The pears were generally good also; some Louise Bonnes from 'Bonnie Brae' had several bad fruits in each 'sample.' The Bartletts were also soaky, but the other varieties were in excellent condition; especially the Duchess pears, which were all good without exception.

"I assisted in preparing and arranging an exhibit of the fruit at Manchester, and brought with me selected samples for a display in Liverpool similar to the one which was so successful in connection with the shipment brought by the Manchester Commerce. The samples I am showing consist of a tray of twenty-five very fine Elberta peaches—all that was fairly sound in two entire cases! Also two cases of red and black Rogers' grapes, two cases of pears and one case of apples. They make a very handsome and effective display and constitute a most valuable object lesson as to what our province is capable of producing. I sent notices to the press announcing the exhibit, and the consequence is continuous crowds as before inspecting and admiring the fruit."

Messrs. B. W. Potter & Co., the consignees, write on the 27th of October as follows concerning the second "*Trader*" shipment:

"We have now the pleasure to report upon the shipment per Manchester *Trader* of grapes, pears, apples and peaches. The latter were nearly all spoiled and we should say that they were packed too ripe. Besides this we see the Wilson cases are not ventilated at all. Kindly examine them and you will see that this is correct. It must have a serious effect upon the fruit.

"The Duchess pears have carried splendidly and taken much the best with buyers, prices varying from 73c. to \$1.40 per case. The Louise turned out very wasty, but the White Doyenne and Anjou were mostly sound. The Bartletts were almost wholly rotten, and we should judge had been picked at the wrong time, or stood before being placed in store. The prices will give you a good idea of the public taste.

"All the apples were in excellent condition, the Ribston's fetching the best prices—\$1.71 per bushel case, with Blenheims and Kings \$1.58, and Fall Pippins \$1.46. We could have disposed of any quantity of these fruits.

"The grapes arrived in very much better con-

dition than last year, their being hardly a bad case. We think the boxes with 4 baskets of 5 lbs. each is the better package, and, as we have said before, the Black Rogers will always sell the best. With a little perseverance, these grapes should be a success, but we want a steady supply for the few weeks the season lasts."

Whether our grapes will ever become popular enough in England to make it profitable to export them seems a question. At first the dealers would not buy them at all, and our consignees had to persuade the costers to take them out on the streets for sale, but bye-and-bye they commanded a small price, which is slowly creeping upwards. But, even yet, the price is not equal to the value of these grapes in Ottawa or Montreal. Here is a report of the sale of 3,360 four pound baskets of Red and Black Rogers carried over in a ventilated compartment and sold in Manchester the 23rd of October :

Import mark or brand.—S. M. Culp, Fruit Grower, Beamsville.

Lot		Baskets.	
1	Red Rogers.....	60	6c
2	".....(12)	60	6c
3	Black Rogers.....(12)	36	8c

Import mark or brand.—D. T. Mackinnon & Son, Bonnie Braes Farm, Grimsby.

Lot		Baskets.	
4	No. 9 Rogers.....	60	7c
5	" ".....	60	6c
6	" ".....(12)	60	6c
7	No. 15 Red Rogers.....(12)	60	9c
8	" 4 Black Rogers.....	48	6c
9	Virgennes.....	60	5c
10	".....	60	5c
11	".....	60	5c

Import mark or brand.—E. J. Woolverton E. J. W. Grimsby.

Lot		Baskets.	
12	No. 15 Red Rogers.....	60	5c
13	" ".....	60	5c
14	" ".....(12)	60	5c
15	No. 9 ".....	60	6c
16	" ".....(12)	72	6c
17	No. 44 Rogers.....(12)	60	8c
18	Salem.....(12)	48	4c

Import mark or brand.—M. Pettit, Mountain Valley Orchard, Winona.

Lot		Baskets.	
19	Lindley.....	60	6c
20	".....	60	6c
21	".....	60	6c
22	".....(12)	96	6c
23	Wilder.....	60	8c
24	".....	60	8c
25	".....(12)	48	8c
26	Agawam.....(12)	36	7c

Import mark or brand.—Isaac Geddes, Winona.

Lot		Baskets.	
27	No. 9 Red Rogers.....	60	7c
28	" ".....	60	7c
29	" ".....	60	7c
30	" ".....	60	7c
31	" ".....(12)	72	7c

Import mark or brand.—N. Keep, Winona, Finest Quality Fruit.

Lot		Baskets.	
32	Red Rogers.....	60	6c
33	".....	60	6c
34	".....	60	6c
35	".....	60	6c
36	".....	60	6c
37	".....	60	6c
38	".....	60	6c
39	".....(24)	60	6c

Import mark or brand.—J. W. Smith, Fruit Grower, Winona.

Lot		Baskets.	
40	Red Rogers.....	60	6c
41	".....	60	6c
41a	".....	60	6c
42	".....(12)	84	6c
42a	Black Rogers.....	204	6c

Import mark or brand.—E. D. Smith, Winona.

Lot		Baskets.	
43	Black Rogers.....	60	5c
44	".....	60	5c
45	".....	60	5c
46	".....	60	5c
46a	".....	60	5c
47	".....(12 Red) (12)	72	5c
48	".....On Shew	104	5c

These prices amount to about five and six cents for a 4lb. package, beautiful little bas-

kets with covers and wire handles, costing without the fruit about three cents each; the price, therefore, leaves only about one cent per pound for our very best Rogers grapes, which are worth from two to three cents a pound in our own vineyards!

We would think from this shipment that we would never be able to export our grapes with profit. A shipment, however, of thirty-nine 50lb. crates, each containing twelve little four pound baskets of Rogers, either red or black, and ninety-four 20lb. cases, each containing four 5lb. baskets, as shown in our illustration,

7 cases at	44½	\$ 3 12
54 " "	48½	26 30
11 " "	54½	6 02
9 " "	79	7 12
13 " "	79	10 29
24 crates "	1.22	29 22
13 " "	1.34	17 41
2 " "	2.43½	4 87

\$ 104 35

CHARGES

Freight	72 10
Manchester canal tolls and quay charges	3 33
Cartage, portage, warehousing, sampling, sampling and taring, clearing and forwarding, warehouse rent, fire insurance	10 00
Brokerage at 5 per cent	5 21

\$ 90 64

\$ 13 71



FIG. 1956. MANCHESTER SHIP CANAL.

and forwarded October, 5th, in Mr. Dryden's compartment on the "Trader" to Messrs. B. W. Potter & Co., Manchester, brought much more encouraging results, and our consignees write that, if we could continue regular shipments weekly and not too many at one time, they think they could gradually work up the price to a paying basis.

The following is our account sales of grapes in our third shipment, the second on the Trader. The varieties were mostly Lindley and Wilder, and were grown by N. Keep, Winona, J. A. Pettit and L. Woolverton, Grimsby.

The graded apples sold remarkably well, Ribston Pippins bringing \$1.71, King and Blenheims \$1.58, and Fall Pippins \$1.46.

The pears also did splendidly, except Bartlett's, which were a little out of season for shipment. Duchess sold at from 97c. to \$1.40; Bartlett, at from 36c. to \$1.22; Louise Borne, at from 24c. to 91c.; White Doyenne, at from 85c. to 97c.; Anjou, at from 73c. to \$1.15; Howell, at 85c.; Sheldon, at from 61c. to 85c.; Beurre Clairgeau, at from 73c. to 85c.; Lawrence, at 97c.; Fearless at from 85c. to \$1.09.

The peaches were past season on October 5th, and had to be kept in ice storage a couple of weeks before sailing. Consequently they did not carry as well as those sent in the previous shipment. The varieties were Late Crawford, Smock, Willett, Elberta, and they did not pay freight charges. We have confidence, however, in peaches that, if picked firm and sent forward immediately, we can land them in perfect condition, and realize long prices; and the same is true with regard to our tender Bartlett pears.

The following is a general summary of gross sales and charges for the whole cargo, the latter of which are altogether too

high and must be reduced in future, if the trade is to prosper :

757 cases pears	\$ 718 69	
44 " apples	68 20	
133 cases and crates grapes...	104 77	
52 cases peaches.....	24 00	\$ 915 66

CHARGES.

Freight	\$ 351 73	
Manchester canal tolls, quay charges	15 50	
Cartage and portorage at docks and Warehousing.....	12 97	
Clearing and forwarding, sampling and taring.....	3 81	
Warehouse rent.....	5 66	
Fire insurance, marine	7 51	
Portage at market	11 51	
Printing	6 02	
Brokerage at 5 per cent.....	45 80	
Cable	73	461 24
		\$ 454 42

Messrs. B. W. Potter & Co., writing on the 3rd of November regarding the second "Trader" say :

"The grapes have not realized much, but the apples and pears should satisfy you we think. It is unfortunate we had nothing from you by the 'Manchester City' in this week, as prices have been still better and all our friends were anxious for further supplies. The quantity of French pears on the market was much smaller during the week and this helped prices. You will find it to the advantage of all concerned to send regular shipments and not one occasionally.

"The Duchess pears have been quite the most successful of any variety. They have carried exceedingly well and stood up afterwards. This is a great advantage and gives buyers confidence to take a quantity. We do not know whether the Bartletts could be picked at the right moment to keep better, but it certainly is their weak point. You will notice the number spoiled this time.

"Would it be possible to send a consignment of fruit in cases to land here about ten days before Xmas? We are confident good prices would be realized. The cases would be handy for presents."

A shipment of pears and apples made on Manchester City by some of our neighbors was sold in three different markets. Those sold in London brought higher prices than those sold in Manchester. The highest price per bushel box of apples got in Manchester was \$1.58 for Spys from A. H. Pettit. The highest in London was \$2.68 for Blenheims, from W. J. Andrews. In Glasgow, Anjou pears from C. P. Carpenter & Sons, brought \$2.44 for half bushel box,

and Kieffer \$1.58. Duchess pears from M. Pettit also brought \$2.44.

A fourth shipment, the third by the Trader, sailed from Montreal on the 18th of November, made up chiefly of bushel boxes of apples, half bushel boxes pears, 48 lb. crates of Roger's grapes in 4 lb. baskets; 24 lb. cases of Kieffer pears, and half bushel cases of orange quinces. A part of the grapes were packed about the 1st of November, and kept in ordinary storage, counting upon cool weather, but the temperature was higher than usual for the season, and in consequence the grapes first packed showed signs of mould before the 18th, and some had to be withdrawn entirely from shipment. The same difficulty was had with the Kieffer pear, which ripened so fast in November without cold storage at Grimsby that the half had to be sold in home markets, and out of 500 baskets intended for export, only about half were in condition to forward.

At the time of writing the report of this shipment is not yet to hand.

CONCLUSIONS.—On the whole we conclude from this season's experience that, with certain limits of temperature guaranteed to to us on shipboard, as has been arranged for us this season by the Hon. Sydney Fisher, and with Hanrahan's system of circulation of air, we may export pears, summer apples and even peaches in perfect condition, and with perfect confidence. We have already established a fine reputation for our goods in Manchester, and if this trade can be pushed forward, there is no question that a new day of better things will dawn for Canadian fruit growers.

Our pears are especially admired and appreciated in England, and we may send forward as many as we like if only properly graded and packed. In evidence of this we quote the following from the "Fruit Grower," of London, England, under date October 4th :

"The samples of pears are unusually large and



VESSEL IN AQUEDUCT OVER THE MANCHESTER SHIP CANAL.

FIG. 1957.

fine. The Williams were grand, and it is clear that no competitor on the market from any outside centre can touch them, for as far as quality, size, flavor and color are concerned they are as perfect as a market Williams can be. The other varieties are also of prime quality. It is thus evident that at last the whole export business has been put upon a proper basis, and that Canadian growers and shippers may rest satisfied with the situation as far as methods of transit are concerned."

And again under date of October 11th :

"It is worth noting that best pears have met a fairly good sale through the week and that the supplies have, thanks to the Canadian shippers, been well up to the mark. The Canadian Williams has attracted a good deal of attention in fruit trade circles. Some large specimens have been put on sale, and as the skins of the fruit were clean and delicate, they met a good reception from buyers in the best fruit shops. We learn that a large quantity of pears are to come across, and that in future years the competition in this branch of trade will be very keen. As a matter of fact the pear trade from October till February is excellent, and good samples put upon our markets during the former months can always be depended upon to secure good prices. The one difficulty as far as Canada is concerned has been overcome. Now they are in a position to put their fruit on our markets in perfect condition, and this is a consideration. So long as the fruit sent is large, of good quality and well graded, it

will pay. It has taken the colony time to master the initial difficulties that beset its path at the start, and it is to be hoped now that it will be able to develop a profitable business with this country."

The following extract is from the "Liverpool Mercury" in October :

"Since mechanical refrigeration was inaugurated on steamers running from Canada to British ports in 1897, many improvements have been made in the grading and packing of fruit, until to-day Canadian-grown peaches, pears and apples can be landed in this country and placed on the market in as perfect condition as if picked a day or two ago instead of a month. This has been illustrated by a consignment recently received in Manchester. The Hon John Dryden, Minister of Agriculture for the Province of Ontario, is co-operating with the growers in the matter, and the Canadian Government are now providing for each chamber fitted for the carriage of fruit a thermograph, or self-registering thermometer, which shows whether the fruit has been carried under proper conditions or not."

Now since the Province of Ontario is more deeply interested than any other Province in the development of this fruit export trade, we think our Association should urge upon our Provincial Government the great importance of vigorously prosecuting this en-

terprise until we see public confidence in it established ; until the days of glutted home markets for fruit are passed away forever, at least for fruit of the higher grades, and until the prices of these goods at home are established by their advanced export value, instead of their being sacrificed as now on overloaded home markets. Why should our pears, that are worth from 75c. a basket for export, and our peaches that are worth from \$1.00 to \$1.50 for that purpose, be sold here at 15 to 30 cents? Why, with such possibilities just within our reach should the

thing be dropped, and our growers left to struggle along in an industry that, though once profitable, is now becoming unprofitable?

The Dominion Government has kindly opened the door for us, and the Provincial Government has begun to take an interest in us ; let us now strongly petition our own province to help us still further to pursue this enterprise, and not to drop it until it is as firmly established as any of our other industries.



AQUEDUCT BEING SWUNG ASIDE TO ALLOW VESSEL TO PASS ON SHIP CANAL BENEATH

FIG. 1958.



FIG. 1959.

EXPERIMENTAL FARM NOTES.—XI.

A MONTH ago it was thought that our fine, mild weather must be nearly over, as there had been a continuous spell of it since early in September, but it was not till October 17th that a severe enough frost occurred to kill such tender plants as cannas and dahlias, the temperature that day being 27.8° Fahr. After that time there was much fine weather and no really hard frosts occurred until Nov. 13th, when the temperature fell to 15.5° Fahr. On Nov. 14th four inches of snow fell, and at this date, Nov. 19th, it looks as if winter had set in, although there is little frost in the ground yet.

As the grapes were not injured by frost until October 17th, a much larger number of varieties ripened than was anticipated, 81 in all which fully matured. The following mentioned in about the average order of their time of ripening are some of the va-

rieties that may almost always be counted on to ripen here : Champion, Moore's Early, Peabody, Moyer, Canada, Merrimac, Wilder, Brant, Rogers 17, Delaware, Brighton, Moore's Diamond, Worden, Lindley and Vergennes, while not always certain to ripen thoroughly are such good keepers that they should be planted where more than the earliest kinds succeed. Champion is of such inferior quality that it is not recommended where any of the others mentioned will ripen.

The work of renewing the vines and old arms which was begun two years ago was continued this year. In this part of Ontario, where the vines have to be covered every winter, it is not a good plan to let the arms get large and stiff, as they are much more difficult to bend, and more soil is required to cover them. Furthermore, the buds are not as reliable on the old arms, and there

are often misses. Good crops may be relied on from young wood if it grows from old roots. It is not, however, a wise practice with the amateur, if the two arm or horizontal system is adopted, to renew the vines every year, as, if they are broken when being bent to be covered, the crop will be lost. As long as the arms are pliable and the buds all show vitality they may be left.

Now that the flowers have gone, the leaves fallen, and the deciduous trees and shrubs become bare, there is nothing which brightens up a landscape so much as something with red or scarlet fruit. The following hardy trees and shrubs are among the best for this purpose, as the fruit is very attractive :

HIGH-BUSH CRANBERRY (*Viburnum Opulus*). This is a well-known native shrub from six to nine feet in height, which is attractive almost the whole year round. It is a free bloomer, and the flowers, while not showy individually, when massed together on the bush produce a fine effect; the leaves also, which are a bright green color and of good form, render it a pleasing object throughout the summer. But it is in the autumn and nearly all through the winter when this shrub shows its most desirable characteristics. Being a profuse bloomer, it is a heavy fruiter, and the clusters of scarlet berries hang in great masses from the branches. The fruit keeps its color well, which makes it particularly useful where pleasing effects in winter are desired.

CLIMBING BITTERSWEET, (*Celastrus scandens*) : There are few hardy climbers which have as many good points as this one. It is a rapid grower, with smooth, green leaves. It is not subject to disease, nor is it affected by insects. After the first severe frost in autumn the orange colored berries burst open and the inner part, which is brighter in color, revealed. In addition to its value as a climber, it may be kept in a

bush-like form on the grounds by pruning back the young growth, and a plant of this kind is very attractive in winter when covered with fruit. In procuring this shrub, care should be taken to get plants with both male and female flowers, as the flowers on some are all males and no fruit is formed. There is a Japanese variety, *Celastrus articulatus*, which has smaller berries, in which there is more contrast in color. It is also very desirable.

THUNBERG'S BARBERRY (*Berberis Thunbergi*) : The barberries are all highly ornamental shrubs, both on account of their attractive foliage and highly colored fruit. Thunberg's Barberry is, however, one of the best. It is a highly ornamental shrub at almost any time of the year. The small leaves are bright-green, and as the shrub is of compact, neat habit, not growing more than four feet in height, they are shown to advantage. The small yellow, flowers, while not showy, are pretty and are a pleasing contrast to the leaves. While an extremely desirable shrub for ornamental purposes in the summer, it is very attractive in winter, as the fruit is bright scarlet and quite abundant.

EUROPEAN MOUNTAIN ASH, (*Pyrus Aucuparia*) : The Mountain Ash is a well known tree, which need only be referred to as among the best of the trees whose bright fruit remains during most of the winter. If the Mountain Ash is grown as a lawn tree, the branches should start from near the ground. A tree of this kind becomes very shapely and is always attractive. The Mountain Ash is much troubled with borers, but these may be prevented by washing the trees with soft soap reduced to the consistency of thick paint by adding a saturated solution of washing soda, or by destroying the borers when their work is noticed.

There are many other shrubs which are quite ornamental in winter, and which brighten up the grounds very much. Among these may be mentioned the Chinese Matri-

mony vine (*Lycium chinense*), with its large fruited variety, (*macrocarpum*), and the various species of *Euonymus*, which are all good, the leaves of many of which becoming highly colored in autumn. There are several species of *Cotoneaster*, the fruit of which is very ornamental in late autumn and early in winter, and which should not be omitted. Several species of roses also fruit heavily, and are quite attractive for some time. Among climbers, some of the honeysuckles are worthy of a place, as besides, being attractive in summer about the

verandah or porch, they furnish an abundance of fruit, which is quite conspicuous in winter.

By a little judicious selection of trees and shrubs it would be no difficult matter to obtain those which would be ornamental in summer, and which would help to enliven an otherwise rather dull landscape in winter.

W. T. MACOUN,
Horticulturist.

Cent. Exp. Farm, Ottawa.

COLD STORAGE EXPERIMENTS.

COLD STORAGE EXPERIMENTS at the Kansas station have resulted in the following table showing the temperature for preserving the different products, as well as the packages in which they should be stored, and the time they may be expected to keep, as follows :

TEMPERATURE FOR PRESERVING DIFFERENT PRODUCTS.

Product.	Temperature.	Package.	Time.
Apples summer	38 to 42 °F.....	Barrels or boxes.....	2 to 4 months.
Apples, winter.....	32 to 35	" "	5 to 8 months.
Pears	33 to 38	" "	2 to 3 months.
Peaches.....	36 to 38	Crates	2 to 4 weeks.
Grapes.....	38 to 40	In sawdust in boxes....	6 to 8 weeks.
Plums.....	38 to 40	Crates	2 to 4 weeks.
Berries and cherries....	40.....	Quart boxes.....	1 to 3 weeks.
Bananas.....	40.....	Crates	8 to 12 weeks.
Lemons, oranges.....	40.....	"	8 to 12 weeks.
Figs, raisins.....	40.....	Boxes	8 to 12 weeks.
Watermelons.....	40.....	"	3 to 6 weeks.
Muskmelons.....	40.....	"	2 to 3 weeks.
Tomatoes	38 to 42	Crates	2 to 4 weeks.
Cucumbers.....	38 to 40	"	2 to 3 weeks.
Celery.....	35	Boxes	"
Cranberries.....	34 to 38	Barrels.....	"
Onions.....	34 to 40	"	"
Potatoes.....	36 to 40	"	"
Asparagus, cabbage.....	34.....	Boxes.....	"

KEEPING QUALITIES OF APPLES.

IT is a matter of common knowledge that varieties of apples, as of other fruits, differ greatly in their keeping qualities. Not all varieties are adapted to the same conditions. In general a juicy fruit or one that matures earlier in the season, does not keep as well as a drier, firmer fruit, or one that matures later.

The Canada Experimental Farms made a test of the relative keeping quality of 23 varieties of apples as stored in a cellar. The temperature ranged from 35° to 40° F. for three months, with the exception of one very cold snap when it fell to 26°. The apples were undoubtedly frozen, but were in the dark and thawed out gradually. April 15, the thermometer rose to 45° F., and in May a little higher. The fruit was not ripe. It was examined May 28, with the following results :

Relative keeping qualities of twenty-three varieties of apples.

Variety.	Sound.	Partly de- cayed.	Rotten.
	Per ct.	Per ct.	Per ct.
Ben Davis	100		
Newell	03	7	
Wagener	88		12
Rawles Genet	82	6	12
Winesap	82	4	14
Walbridge	73	13	13
Green Sweet	72	11	16
Crimean	62	15	23
Lawver	49	11	40
Bombardier	44	36	20
Duke of Connaught	42	16	42
Hardy	34	33	33
Swayzie Pomme Grise	31	6	63
Pewaukee	20	47	33
Waterson No. 3	20	40	40
Salome	20	40	40
Fameuse	12	18	70
Quaker Beauty	4		96
Hardisty		25	75
Haas			100
Gideon			100
McIntosh			100
Anisovka			100

Grapes in sawdust gave better results than those in baskets or open trays.

The berries seemed to hold to the stem better than in either of the other cases. They were also slower to show mildew, owing to the fact that the sawdust absorbed

the moisture that evaporated from the grapes and kept them dry. A difficulty with sawdust packing is that it adheres to the fruit and stem so that in shaking it off the berries are detached. Cut cork was suggested as better packing material than sawdust. Next after packing in sawdust the method of storing in trays gave best results, as it kept the fruit drier than the baskets.

Dryness is essential to the successful preservation of grapes. Moisture causes the growth of mold, which at once ruins the fruit. With the present moist storage rooms some good absorbent such as sawdust must protect the fruit. Better success with grapes would be attained in a room cooled by dry, cold air currents than by the present systems of refrigeration. Such storage rooms are already being planned in some warehouses. * * *

Grapes held up in good condition from six to eight weeks. The results of other seasons agree in fixing this as the limit for grapes grown in our section. The length of time varies considerably with the different varieties. Delaware, Agawam, Brighton, Duchess, Centennial, Concord, Worden and Hays, ranking in the order named, have kept the best. It is noticable that the red grapes head the list, the first three being red. The fourth and fifth of the list are white, while the black grapes represented by Concord and Worden rank in sixth and seventh places. The varieties that kept best are those that rank as early grapes. However, no extremely late varieties were tried. Had they been tried the results might be different. The climate in which the grapes grow modifies their keeping qualities. A grape that matures slowly in a climate of moderately cool, regular temperature will keep longer than one whose ripening it hastened by excessive heat.

Plums differ much in their behavior in cold storage. Robinson and Weaver, very juicy varieties, were kept from three to four weeks. With such varieties decay proceeds very rapidly when once it has begun. Less watery sorts, as Golden Beauty and Moreman, were kept in the station cooling room, which had an irregular temperature averaging about 50° F. for more than a month.

Weizerka, a meaty, prune-like variety, kept for a still longer time.

Tomatoes, picked when just beginning to redden, wrapped separately in tissue paper and placed in a crate packed on the bottom and top with excelsior, were kept about two months. Green tomatoes may be held in storage for several months, but when removed instead of ripening, they simply rot.

Tests were made with cucumbers, but, contrary to expectation, they did not keep well. "With our present knowledge," says the Kansas Station, "we can not regard the cucumber as a success in cold storage."

In recent experiments in England, according to the Journal of the Board of Agriculture, the storage chambers were fitted with tiers of galvanized wire shelves around the sides and the fruit was placed on cotton wool.

It was found that strawberries could be kept for at least three weeks in a temperature of 30°, but it was necessary to sur-

round the fruit with cotton wool, or, in the case of fruit in sieves, to place a pad of that material over the top. When this precaution was not taken, the fruit, though sound, became dull and lost the fresh inviting appearance which is so important when it is offered for sale. Black currants kept well for ten days, after which they began to shrivel, but plumped and freshened on exposure to the air so as to be marketable. This was especially the case with black currants that had been stored in market sieves covered with a wad of cotton wool. After a fortnight's storage, the temperature was raised from 30° to 32° F., and this seemed to give the best results. The experiments with red currants were an unqualified success, the fruit remaining perfectly sound for six weeks, and maintaining its freshness when exposed to a normal temperature for sixteen hours. Cherries covered with wool kept for a month at a temperature of 30°, and at 36° were not only sound, sweet and juicy, but fresh and clear. After the fourth week the fruit began to wrinkle. * * *

Green gages were kept in excellent condition for ten weeks and Victoria plums kept for nine weeks, but the cooking varieties of plums, with that exception, did not lend themselves satisfactory to cold storage.—*Kansas Expt. Sta. Bul.*

PACKING APPLES FOR EXPORT.

SO much has been said and written about the importance of packing apples carefully and honestly that it might seem almost like a useless repetition to refer to the subject again. Yet the conditions this year are somewhat unusual and it is therefore worth while to study them with unusual care. The facts are about as follows—The world's crop of apples is an exceptionally large one, perhaps the largest in the history of the industry,

and this in spite of the large quantities that were blown from the trees during the recent high winds. On the other hand the crop of Nova Scotia is probably *not* so large as last year and certainly not of as high quality. The black spot has been unusually prevalent the past season and apples are spotted and cracked as they have not been for some years, and everyone who has ever had the least experience in packing such fruit knows that it is well nigh impossible, even with the best

of intentions, to exclude all unsound fruit. As a result of all this our Nova Scotian growers will have more rivals against whom they must compete in the English markets, yet their goods which they offer will not be up to the usual standard in quality.

In view of this fact it behooves every orchardist to sort and pack his apples with unusual care and to send forward only the best. It is quite probable that he will receive as much money for his crop if he ships only those that are sound and unblemished, packing them as No. 1s and 2s (it is a mistake to send unsound fruit or "drops" as No. 2s or or any other number), and disposes of the less desirable grades in local markets and at canning establishments. And it is *undoubtedly* true that by so doing the reputation of Nova Scotia fruit will be kept at its present high standard, and the future prospects of the trade thereby improved. Indeed some growers, whose opinion is entitled to great respect, have gone so far as to say that it would in the end be better for the apple growers if the present crop could be destroyed altogether. This may be taking a somewhat pessimistic view of the situation, yet it undoubtedly rests with the growers themselves to determine how much ground there is for this opinion.

Another feature of the question is worthy of careful thought. The large crop and comparatively low price of apples will mean that they will find their way into parts of England and other European countries which have not heretofore received any Canadian fruit. If these trial shipments shall open in attractive condition there will be a demand for more, and this demand will continue another season even though prices may be somewhat higher. But if these first shipments of our fruit shall prove poor, dishonestly packed and generally unsatisfactory, the result will be that we shall have no further demand from that quarter either this year or future years, at least till this first impression has been removed.

What is to be the result of this year's sales? Fair prices for our fruit, an enlarging of our markets, and bright prospects for the future? Or a demoralized market this year and a prejudice against our fruit which it will take years to overcome? It is the fruit growers themselves who must answer this question!

F. C. SEARS,
School of Horticulture.

Wolfville, Nova Scotia.

APPLE BUTTER.—The following receipt for making apple butter is given by the Rural New Yorker:

Apple butter should be made from new cider, fresh from the press, and not yet fermented. Fill a porcelain-lined kettle with cider and boil until reduced one-half. Then boil another kettle full in the same way, and so continue until you have sufficient quantity. To every four gallons of boiled cider allow a half-bushel of nice juicy apples, pared, cored and quartered. The cider should be boiled the day before you make the apple butter. Fill a very large kettle

with the boiled cider and add as many apples as can be kept moist. Stir frequently, and when the apples are soft beat with a wooden stick until they are reduced to a pulp. Cook and stir continuously until the consistency is that of soft marmalade and the color is a very dark brown. Have boiled cider at hand in case it becomes too thick, and apples if too thin. Twenty minutes before you take it from the fire add ground cinnamon and nutmeg to taste. It requires no sugar. When cold, put into stone jars and cover closely.

LOYALTY COMMEMORATED.



FIG. 1960. MEMORIAL COLUMN.

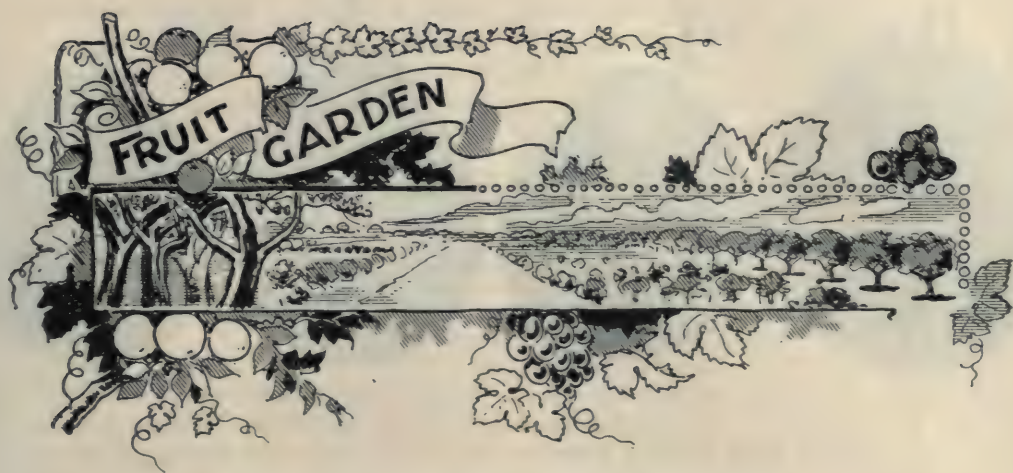
THE loyalty of the Canadian soldiers to the Empire has been proved on many a battlefield in South Africa, but the Canadians who have staid at home have been no less interested and sympathetic and loyal. These sentiments have been shown in a hundred different ways, one of which is shown by the accompanying illustration. It is a "broken column" composed of living plants erected in the Public Gardens at Halifax, Nova Scotia, to commemorate the brave defence of Kimberly and in honor of the first Canadian to sacrifice his life there.

The circular bed on which the column stands and the base of the column are composed principally of *Ledum glaucum* and *echeveria*, with a single row of golden *crassula* near the outer edge of the bed and

"H Co." in the same plants, the "H" being on one side of the column and the "Co." on the other. At the back of the column in the circular bed is the word "Africa," and in front "Heroes." The upper part of the column and the conger section in the centre are each composed of *alterianthera*, while the division in which the word "Wood" appears is made up of *Cerastian tomentosa*, and the lower division which includes the word "Kimberly," consists of a species of *herniaria*. Altogether it is a most interesting and artistic bit of work and one which is a credit to Mr. Power, the Superintendent of the Gardens, who was instrumental in having it erected.

J. C. SEARS.

School of Horticulture,
Wolfville, Nova Scotia.



THE EFFECT OF POLLINATION.

IF late much has been said and written in regard to the effects of different pollen regulating the size of fruits. In several back numbers of the *Canadian Horticulturist*, this subject has been fully treated, and again in an excellent Pamphlet, No. 181, by S. W. Fletcher of the Cornell University Agricultural Experiment Station, in which the author draws attention to the following facts proven by experiment in regard to pears. Seckel pollinated with Keiffer pears are much improved, whilst Lawrence pollen has not much effect. Clapp's Favorite, when pollinated with Keiffer, was much larger than when pollinated with Lawrence. Louise Bonne and Howell, when pollinated with Clapp's were twice the size of those pollinated by Bartlett, and turning to stone fruit, Coe's Golden, when crossed with French prune was much improved, and Green Gage crossed with Italian prune was improved, and Satsuma crossed with Abundance was also improved.

But to come to results obtained near home, the writer, in 1894 planted a pear orchard of 1200 trees, and, amongst other varieties planted, put Duchess and

Keiffer in each alternate row; the fruit last year was not very plentiful, but the effect about to be stated was noticeable. This year the trees were well loaded, being clean and smooth, and there the effect of beneficial pollination was very much shown. In the illustrations, Nos. 1, 2, 3 and 4, No. 1 shows a Keiffer pear pollinated with Duchess, No. 2 a Duchess pollinated with Keiffer, Nos. 3 and 4 show an average sized Keiffer and Duchess respectively.

Now here in picture No. 1 we see the good effect of Duchess pollen in the Keiffer pear. Observe the characteristic enlargement of the blossom end, common in the Duchess; the skin, too, was of the rough speckled Duchess type, whilst the flavor was much improved. Placed side by side with a Duchess, not one prominent fruit-grower could tell the difference when shown both.

No. 2 shows a Duchess pollinated by Keiffer pollen; here it makes the Duchess smaller; note the tendency to grow smaller at each end, and especially the familiar ring or bulge half way down the pear, so common in the Keiffer pear. The flesh, too, was coarse and more gritty; it lacked, too,



No. 1

No. 2

No. 3

No. 4

FIG. 1961. POLLINATION. (1) KEIFFER POLLINIZED BY DUCHESS. (2) DUCHESS POLLINIZED BY KEIFFER.
(3) AVERAGE FORM OF KEIFFER. (4) AVERAGE FORM OF DUCHESS.

that russet yellow color. Both specimens were very carefully taken off the tree, wrapped and labeled by the writer, so no confusion could arise to doubt the effect of the pollens.

Now compare Nos. 1 and 2 with 3 and 4,

fair samples of a Keiffer and Duchess, and the effect is clearly shown. The effect was noticeable throughout the orchard, and what can we sum up from this? In planting Keiffer and Duchess near each other we evidently impair the quality of the Duchess



No. 1. KEIFFER DUCHESS.

No. 2. KEIFFER.

FIG. 1962. KEIFFER DUCHESS AND KEIFFER COMPARED.

unless it has a better keeping habit, whilst the Keiffer is very much improved in quality, color, and most especially in style. Certainly the Duchess was much cleaner and smoother, with a tougher skin. Following along these lines we can so plant our orchards so as to materially alter the form and texture of our fruits, and if so we are

only beginning a process the result and end of which is hard to see. Surely it is an error the old notion that the effect of cross pollination was only shown in our fruit grown from the seedlings of the parent fruit thus pollinated and not in the fruit itself.

Winona.

N. KEEP.

A MODEL ACRE OF STRAWBERRIES.

I SEND you a statement of my method of growing fancy berries for market. The varieties used are Marshall, Wm. Belt and Brandywine, principally Marshall. The plot herewith described contains two acres.

The land of clay-sand loam containing more or less stone, in good condition, was plowed and thoroughly fitted, finished up by rolling.

It was then marked very accurately 30x36 inches by markers made of $\frac{3}{8}$ x10 inch strips with runners on the under side and a pair of handles like thills. A line was stretched along one side and across one end as a guide for the marker, after that one runner of the marker was run in the last mark made. With a little care almost perfect marking is the result.

The plants, 5800 per acre, were set with spades, the spademan carrying the plants, straightened and very wet in a basket strapped upon his back, the setter, generally a boy, taking a few plants from the basket at a time in his hand while the spademan with a moveable wooden sole or sandal upon his shoes thrusts the spade well down into the soil, then forward when the setter with a quick snapping movement snaps the plant behind the spade, being sure to have the roots straight down and well spread. The spademan then removes the spade in such a manner that the earth falls back upon the

roots, he stepping close beside the plant thus firming it.

When setting was finished, the Breed Horse Weeder was used, and continued until the crowns became so large that it began to break them off, when the 13 tooth Iron Age cultivator going both ways was substituted. By the frequent use of the above tools and a very little hand hoeing the field was kept free from weeds and showed great vigor.

Up to August 1st all runners were kept off, then are allowed to make plants for about ten days when they were bedded in as follows: two runners or plants from each side of the old plant were stretched out in the 36 inch way covered in or fastened down with earth or stones, all other runners pinched off. When finished the beds consisted of rows $2\frac{1}{2}$ feet apart in the rows, the hills of old plants 36 inches apart with two clumps of two new plants each, twelve inches from each other and also twelve inches from parent hill or plant. Afterward all runners were kept off. The final result is the bed now contains per acre 5800 hills of from 4 to 10 crowns each and 23000 immensely strong new plants capable of producing strictly fancy fruit in large quantities.

The fertilizer applications were as follows within ten days after planting, 5000 pounds high grade compost per acre which was at the rate of an ordinary handful about each

plant. Just previous to bedding 250 pounds fine ground bone and 100 pounds muriate potash was spread where the plants were to be bedded and thoroughly cultivated in. A third application of 400 pounds ground bone and 250 pounds sulphate of potash was made broadcast between the rows in October.

The field is now covered with straw at the rate of three tons per acre spread between the rows, care being taken to keep it off the plants. We believe in early mulching.

As has been the custom for many years, the fruit will be carefully picked stems on, avoiding all bruising, careless handling, etc., thoroughly sorted by the pickers, who place all small, mis-shapen, over or under ripe or otherwise objectional fruit in separate baskets to be sold as culls to peddlers for local consumption, while the perfect fruit packed in new baskets in either new or

well painted crates will be shipped to various markets or sold to buyers here as circumstances shall dictate.

Herewith I append cost of growing block of two acres described :

Plowing and fitting.....	\$18 00
Plants.....	23 20
Setting.....	6 00
Filling in.....	1 00
Fertilizer.....	18 00
Applying fertilizer.....	1 00
Fertilizer (500 ground bone, 200 muriate potash).....	11 00
Application.....	1 60
Cultivating and hoeing.....	28 20
Bedding runners.....	18 20
Cutting runners.....	20 60
Fertilizer (800 ground bone, 500 sulph. potash).....	23 00
Mixing and applying.....	2 00
Straw, 6 tons (@ \$5.00).....	30 00
Spreading.....	5 00

Total\$206 50

—*The Strawberry Culturist.*

FOOD VALUE OF FRUIT.

IN recent years the growing of fruits has assumed great commercial importance in many regions of the United States, especially in the South and on the Pacific coast. The amount of fruit consumed in the average household has undoubtedly increased with the greater production and facilities for shipping and marketing.

Many stations have reported analyses of fruits and made extended studies of the different methods of growing fruit trees, their soil requirements, enemies, etc.

The stone fruits constitute an important group, and have been studied for a number of years by the California and Oregon stations. Fresh peaches, apricots, cherries, prunes and plums are general favorites, while enormous quantities of these fruits are canned, dried or preserved in some way. It is interesting to compare the composition of

these fruits, fresh and dried, with each other and with some of the staple articles of diet.

It must not be forgotten, however, that fruits are valuable for other reasons than the nutrients which they furnish. They contain acids and other bodies which are believed by physiologists to have a beneficial effect on the system and, doubtless, very often stimulate the appetite for other food. They are also useful in counteracting a tendency to constipation. Another point—and one entirely apart from food value—should not be overlooked. That is, fruits add very materially to the attractiveness of the diet. It is not easy to estimate their value from this standpoint, since often the appearance of food has a value which cannot be measured in dollars and cents.—*The Farmer.*

THE WILLETT PEACH.

WALLACE P. WILLETT, writing to the Country Gentleman, notes the fact that the Willett Peach is one of the seven varieties that did well in a trial of 225 varieties at the Michigan Experiment Station. He says that the original seedling tree was grown in the yard of his city home, 110 W. 48th St., New York city, from a peach stone brought from South America. He exhibited specimens at the American Institute fair in 1874 and received a diploma. He writes :

A nurseryman who saw the peaches there, begged of me some cuttings the following year, which I sent him, and from those cuttings he propagated the Willett Peach. I also sent him fruit from the original tree, which fruit he placed before the Pomological Society of the state of New York, who named it the "Willett Seedling," and pronounced it "the finest late peach grown," as he wrote me. I have never taken the trouble to look up that record, and don't know if it exists to-day.

I have never been without the Willett peach, and never failed in any year to have specimens measuring at least 9 inches in circumference and weighing at least 9 ounces each, always having received my fresh supply from said nurseryman until his death.

His successors have not been as careful of the propagation, and quite shamed me with my friends, among whom I have been accustomed to distribute trees, by sending me for the Willett an entirely different and inferior peach ; in fact a white clingstone, which decayed on the trees before ripening. Fortunately, I had several true Willets on my place, and now produce my own trees, true to name. I find the Willett is entered in my catalogues South and North, and now West.

Sitting on my piazza two autumns ago, a tree agent came along soliciting orders. Looking over his catalogue, I was confronted with a fine picture of the "Willett Seedling" peach, with letter-press copy of myself as its producer, with all particulars. I took the gentleman to my peach garden, and showed him the perfected originals of his drawings.

Now, after 25 years' test, if the testimony of those who see and taste and raise the Willett peach from trees that I have distributed is worth anything, it is not too much to say, as said the Pomological Society, the first years of its introduction, "The Willett Seedling is the finest late peach grown," and I may perhaps congratulate myself on having given to the world a peach of beauty and a joy forever.

THE CHAIRS PEACH.

THE wonderful peach crop of this year is teaching us some useful lessons about varieties. Some of the old ones hold their own remarkably well, and others are being outclassed by better ones of the same character. The demand for yellow peaches seems to be on the increase, and whatever color is fashionable is the one to grow. The Crawfords, Foster, Reeves,

Smock and lately Elberta have largely been the cause of this popular notion, because they are all peaches of good quality, except it be Smock, which has been mainly popular with the canners. Many varieties have been brought forward of the season and character of Late Crawford, but none that seems to be superior in all respects except Chairs. Having just made a trip of investigation through

the peach orchards of Delaware, which are almost universally loaded with fruit, it has been a rare opportunity to see what the varieties have done, and there seems to be no



FIG. 1963. THE CHAIRS PEACH.

variety of that season that equals it, although there are plenty of competitors. It is just like a very large Late Crawford, but excels it in size and seems to be less subject to rot.

It is also a trifle longer in ripening its fruit, which is sometimes very convenient when a large quantity requires marketing. The fruit hangs on remarkably well.

The variety originated on the premises of Franklin Chairs, of Anne Arundel County, Md., about 1880, and has been grown more or less in many sections ever since. At first it was called Chairs Choice, but the name is now cut down to the single word Chairs. Many orchards of it have been in bearing for years past, and thousands of baskets and boxes of the fruit have gone to market and been handled on the reputation of Late Crawford, because the old name would be an advantage in the sale, the dealer and buyer both thinking they had rarely seen such fine Crawfords, when it was really the Chairs. Those who contemplate planting a medium late yellow freestone will do well to plant Chairs, except where varieties of the Crawford type do not succeed. The drawing reproduced in Fig. 1963 was made from a good average specimen from a tree that was well laden, on the farm of Charles Wright, of Seaford, Del.

H. E. VAN DEMAN,
in R. N. Y.

JAPAN PLUMS.—Prof. Waugh, of the Vermont Experimental Station, says: "Undoubtedly the hybrid varieties most widely known are Wickson and Golden (often called Gold); and if we were to add a third to the list, it would certainly be Juicy—all three the productions of one man, and that man Luther Burbank. The two varieties first mentioned have been planted all over the United States, and have been fruited this year in hundreds of orchards. The experience thus gained may be fairly summarized, I think, by saying that while both varieties are beautiful in fruit and possess many desirable

qualities, neither one has shown any mentionable promise of taking rank with our well-known market plums, nor even of becoming a pre-eminent desirable house-use plum in any part of the United States or Canada. Both promise to be grown for years to come, but neither one has yet secured first rank either in the market or the amateur list, and neither seems likely to do so. The experience of a few individuals may not accord with this view; but taking the country as a whole, I am confident this is the result."

FAVORITE APPLES AND PEARS IN ENGLAND.

FOLLOWING its usual system of making a numerical analysis of the exhibits at the great exhibitions, the "Gardeners' Magazine" presents figures relating to the recent great show of hardy fruit in London. There were 2,069 dishes of apples alone in 299 varieties. Of pears there were 1,099 dishes in 122 varieties.

The leading apple in this gigantic display was Cox's Orange, shown 85 times. This apple is pre-eminently the finest flavored winter apple grown in the United Kingdom and is becoming more and more popular. It realizes top prices in the market, and around the holiday season reaches sometimes to fancy figures. Others in order are Ribston, 73; Peasgood's, Nonsuch, 72; Warner King, 71; Worcester Pearmain, 61; Alexander, 47; King of the Pippins, 44; Lane's Prince Albert, 44; Blenheim, 39; Gascoyne Scarlet, 38.

Bismark is thirteenth with 32; Mother, 27; Washington and Wealthy each score 18; Gloria Mundi and Tompkins King, 15

each; Sturmer, 11; Oldenburg, 10; Gravenstein, 7; Nanny and Reinette du Canada, 6; Twenty ounce, 3; Astrachan Red, 2; Baldwin, Beitigheimer Red, Early Harvest, Grime's Golden, Spy, 1 each. It is noticed, too, that several of the Russian type appear at the tail end of the list.

In pears the leader is Pitmaston Duchess, 82; with Doyenne du Comice, Louise Bonne de Jersey, Marie Louise, Souvenir de Congress, Durondeau, Diel, Beurre Superfin, Williams (Bartlett), Boussock, Angouleme and Hardy following in order, the last named having 25 points to count. Conference, 20; Bosc, 17; Nelis, 13; Anjou, 12; Seckel, 10; are other varieties well known here.

One remarkable feature is the comparative importance of the more modern varieties. It is evident that the British fruit grower is not slow to try a novelty and the resulting appearance at such exhibitions may convey a false impression of the actual merits of the variety.—*American Garden.*

FALL WORK FOR SAN JOSE SCALE.

THE rapid and unusual development of the San Jose scale the past hot summer in some sections calls for vigorous work on the part of the fruit grower. The following is recommended by Prof. W. G. Johnson, the Md state entomologist, who has done more work against the scale than probably any other eastern man. All badly infested trees, of whatever variety, should be grubbed out without delay. Pile the brush and wood where the tree stood, but do not burn it until next May or June. This is done to preserve the little parasites that feed upon the scale.

The scale cannot leave a branch or twig to which it is attached, while the parasites escape and fly to other trees. Spray all suspicious trees with a 10 per cent. mixture of kerosene and water before the leaves fall, and while the pest is still active and breeding. The scale will continue to breed until checked by cold weather. Select a calm, sunny day for the spraying if possible.

Late this fall, after the foliage is off, whale oil soap at the rate of 2 lbs in 1 gal. of water can be used on pear and apple trees, but it is not recommended for peach and plum trees. It can be used, however,

to wash the trunk and larger branches of peach and plum, but must not come in contact with the fruit buds, as it will kill them. The main object of fall spraying is to break up the scattering of late broods. This having been accomplished, the spray can be

repeated again next spring, just before the buds swell, with a 20 per cent. mixture of kerosene and water. This stronger mixture must not be applied in the fall, winter or on a misty or damp day.—*American Agriculturist*.

CANADIAN VS. FRENCH PEARS.—A remarkable testimony to the excellence of Canadian Bartlett pears comes from the London (England) Daily Mail :

Many varieties of magnificent pears, 1,000 cases in all, and numerous cases of famous Crawford and Elberta peaches have just been landed and sold at Manchester. The fruit came from London, Ontario, and created quite a stir in trade circles. Many of the pears are quite what are termed giant fruit. In color, flavor and juiciness they are far superior to French pears, and met a ready sale. The fruit was packed in chambers regulated by mechanical refrigerators.

That Canadian pears should surpass the French pears when tested by the educated taste of the fastidious Englishmen is quite worthy of general congratulation among Canadian fruit growers. France is famous for the excellence and variety of her pears, as is shown by the long list of French names of pears, and her exports of this fruit to Great Britain are enormous in quantity. But Ontario bids fair to win her laurels

away from her, and, if we mistake not, her pears will soon be more famous in the great markets of the world than were Californias.

The Bartlett, strange to say, succeeds far better here than in England, the place of its origin. Berkshire is its home. About 1770 it was introduced to the public by a nurseryman in Middlesex, named Williams, and has ever since been known in England by his name. In 1797 Enoch Bartlett, of Boston, introduced it into America, and there his name was substituted for Williams.

This pear has such a tendency to mature quickly and soften, that to land it in a firm condition in the Manchester market a month after it was gathered in our Canadian orchards was indeed a triumph for Mr. Hanrahan's system of ventilated cold storage, which is being adopted for the carrying of our fruits.

AN UNPROFITABLE PEACH CROP is reported from Delaware and Maryland owing to the enormous quantity of small sized fruit on the trees. Growers are bitterly disappointed, because this was the first big crop in four years, and they expected to reap rich returns. Instead of this, their fruit has not been worth picking and thousands of bushels have rotted on the ground. The cause of the small size is due in part to the overloaded state of the trees, and in part to the

very dry summer. They have learned one lesson by a costly experience, that thinning must be done in order to grow profitable grades of peaches. Low grade peaches were not worth over 5 or 10 cents for half bushel baskets, medium grade 15 to 20 cents, while strictly fancy fruit brought from 60 to 90 cents a basket. Where no grading was attempted buyers usually bought the whole at the value of the poorest grade in the package.



TIMELY TOPICS FOR THE AMATEUR.—X.

[We have pleasure in again showing our readers the face of our most valued correspondent on Floriculture, Mr. W. Hunt, of Hamilton, who writes for us so regularly under the *nom de plume* of "Hortus." Long life to one who is making himself so useful to our readers.]



FIG. 1964. WM. HUNT.

DECEMBER, 1900! The present number of the Horticulturist completes the last volume for the 19th century. The next issue, January, 1901, will indicate the launching forth into 20th century horticulture!

A glance backwards into the records of horticulture of the fast closing pages of the present century, reveals the fact that great progress has been made during that period in all parts of the civilized world.

Floriculture more especially has become much more popular and universal, particularly during the latter half of the century. The improved social conditions prevailing, and a better and more general system of education than before existed, have favorably influenced the growth of floriculture to a considerable extent. The opening up of new countries to commerce, with increased facilities of communication, have also been the means of adding considerably to the somewhat meagre list of foreign and exotic plants that had been introduced to horticulture prior to the advent of the 19th century.

A glance through the catalogues of our nurserymen and florists of the present day, or a stroll through our principal markets when the flower season is at its height, are convincing proofs of the great advance made in floriculture of recent years.

Plants that are indigenous only to tropical and sub-tropical climates, and that half a century ago were seen only in the gardens of the wealthy are now within the reach of almost every one, at reasonable prices. The

more general dissemination of horticultural literature in the shape of magazines, illustrated catalogues, etc., have also been of great benefit in creating a desire for an improved and more varied selection of plants and flowers.

Very few varieties of plants that even forty years ago were thought to be the acme of perfection can be found under cultivation at the present time. The old fashioned single geraniums of that date, such as Stella, Pink Cristine, Madame Vanchre, or even the first introductions of the double varieties a few years later, such as Madame Lemoine, Gloire d'Nancy and others of a similar type, are entirely superseded by the improved and semi-double varieties of these plants so popular with the flower-loving public of to-day.

The older types of the canna, coleus, fuchsias, etc., of half a century ago cannot be seen in our gardens or greenhouses at the present time. One exception, amongst others, may be noticed in this respect, viz.: that of the *Verschafeltii* variety of coleus that still stands in the front rank as a bedding Coleus, after being under cultivation nearly or quite half a century. A few descendants of the original varieties of Persian lilacs, *Philadelphus* (mock orange), etc., still hold a deservedly popular place amongst the newer species and varieties of these useful plants that have been introduced more recently. Some varieties of the lilac have been cultivated in European gardens for over two centuries.

So far as we are concerned here in Canada, floriculture has made very rapid progress, more especially during the last thirty years. Prior to that time there were very few plants, except a few of the commonest geraniums, fuchsias, pansies, etc., offered for sale in our markets. The growth of floriculture, and the demand for a better and more varied selection of plants and flowers during that time has been very noticeable.

The beautiful specimens of plants such as palms, exotic ferns, begonias and even Orchids, natives of far-away lands, exhibited by amateurs at the numerous floral exhibits held under the auspices of our affiliated horticultural societies, is ample evidence of the growing taste of Canadians for all that is rich and beautiful in the floral world.

There are, however, several methods that would probably assist the more general adoption of floriculture than now exists, one of which is to try and induce our young people, even the school children, to interest themselves more in the culture of plants and flowers. A step in this direction has already been taken in several places, with very favorable results. The executive of the Hamilton Horticultural Society made a commencement in this direction during the past season. About 300 geranium plants were distributed in May to the scholars attending the public and separate schools.

In October an exhibit of the plants was given in the Queen Victoria School, and premiums, consisting of plants, awarded for the best plants grown by scholars individually, as well as similar premiums for the collective exhibits from each school. A great deal of interest was taken by the scholars and their parents in the exhibit, and the directors were well satisfied at this, their first attempt to encourage the love of horticulture amongst the young folks.

Photography might also be made useful as a feature, not only of our public exhibits of plants and flowers, but also at the winter meetings of our societies.

A description of an exhibit of this nature was given in a recent number of the "Agricultural Economist," a London, England, publication, edited by E. Owen Greening, Esq., who was the originator of the Society under whose auspices the exhibit was held. The title of the Society is a decidedly appropriate and suggestive one, viz.: the "One and All" Society. The exhibit of photo-

graphs proved almost as interesting to the crowds of sight seers as did the magnificent display of the products of greenhouse, window and garden, many of the exhibits in both classes coming from people living in the centre of the busy, bustling metropolis of London itself.

The use of the camera, more especially for recreative and pleasure purposes, has become so general, that I feel certain the directors of our Societies would receive the

people, is too little thought of in these days of commercial activity, and sometimes undue enterprise.

The coming century will, I trust, see an immense development in the more universal culture of plants and flowers by our people. It is a well recognized fact that where there is a community or nation, where the love of floriculture is general, there you will usually find an intelligent, law-abiding, God-fearing people. I am afraid I have gone somewhat



FIG. 1965. "AN AMATEUR'S GREENHOUSE."
Owned and Photographed by T. Glover, Hamilton.

heartly support of not only members, but of all classes of the community, more particularly that of our young people, if this feature were added to our exhibitions and meetings. Premiums could be given for deserving pictures exhibited, consisting of articles used in photography, or plants or bulbs could be given in the same way as for floral exhibits. The social and even national importance of encouraging these and similar projects, more especially amongst our young

out of the usual beaten track in writing this article, but I hope to be excused for my transgression in this respect, as it is the last opportunity of the nineteenth century. I wish everyone, and especially readers of the *Horticulturist*, a happy Christmas for the closing one of this century, and a glad, prosperous and peaceful New Year as a commencement for the coming 20th century of the Christian era.

Hamilton.

HORTUS.

GREENHOUSE AND WINDOW PLANTS.

ROUTINE work amongst the plants and flowers will be the principal features in connection with horticultural work from now until the first days of spring, unless exceptionally fine weather should prevail during the coming winter season.



FIG. 1966. SPIRAEA.

Chrysanthemums are a comparative failure in this section this fall, owing to the prevalence of the destructive fungous disease known as "rust." Very few of the fine specimens of these lovely flowers we usually see—that seem sent specially to brighten up windows and conservatories, during the usually dull days of November—can be seen this autumn. In fact their absence this season from windows is very noticeable, as a plant or two of chrysanthemums are generally such prominent features in window

gardening during the autumn season. Plants grown out of doors during summer have suffered most; those grown on benches under glass seem to have almost entirely escaped this comparatively new enemy of the gardener.

The old saying "that no person has as many enemies as a gardener" seems to be as true to-day as it ever was. At any rate, no sooner do our entomologists and scientists diagnose and find a remedy for existing insect pests and diseases that of recent years seem so common to plant life, than some new claimant enters the field and requires attention. This last disease to attack the chrysanthemum is certainly very destructive in its effect on these autumn favorites, and no certain cure seems to be known for it except to destroy the plants entirely. Successful batches of winter flowering bulbs should be brought out from where they were placed to make root and brought on into flower. These must have plenty of water when once growth is started.

Roses should be syringed as often as possible early in the day with tepid water. Syringe and water plants on warm sunny days if possible. Seedling cinerarias, calceolarias and cyclamen will require repotting as soon as the pots they are in are fairly full of root. Spireas must have plenty of water to keep them growing properly.

Plants of hydrangeas, agapanthus, clivias, etc., should be removed to their winter quarters. This class of plants that are dormant or semi-dormant in winter require very little if any water. The extent of the dampness surrounding them, wherever they are stored, must determine whether they require any water or not. If the situation is cool, and not too dry, these plants will be better without any water until spring.

Hybrid perpetual roses grown in pots

should be brought in, pruned back and repotted.

Fuchsias for summer blooming will require very little water. A cool cellar, free from frost, suits the fuchsia very well whilst in a dormant state. Cuttings of geraniums that are rooted should be potted in to rather light sandy soil, in small pots, and remain in these until well established.

Keep the atmosphere of the greenhouse, or any situation where plants are growing, as moist as possible. This will keep down insect pests and less fumigating and syringing will be necessary.

Fuchsias will require plenty of water at the roots now and during the flowering season. A cool, slightly shaded position suits these plants best when in flower.

Keep the temperature of the greenhouse or conservatory about 50° to 55° at night, and 60° to 70° in the daytime. Plants require rest during the night. It is unnatural and hurtful to give them a higher temperature at night than in the day time. This is often done, especially during severe cold weather and on dull days.

HORTUS.

Hamilton.

BULBS FOR SPRING BLOSSOMING.

EVERYONE longs for spring to come when winter is here. The sight of budding trees and bursting flower buds is a glorious change from the barren fields of winter. This is why the earliest flowers of spring give the most pleasure to every one. Aside from the earliest of the wild flowers, none are more valued than Dutch bulbs, and none are more beautiful. Coming into bloom as they do just as lawns and trees are putting on their early green, they are simply enchanting.

October and November are the months for planting bulbs, but those who have not done so before these months expire need not fear to do so later, even should it be in open weather succeeding a freezing time. I have planted them at New Year and have had fine bloom. Indeed there is no reason why one should not, as all that is required is to have them in the ground two or three months before blooming, so that there will be ample time for them to make root. From the early part of January to the beginning of April, which is the time bulbs flower here, there is

ample time for the formation of roots, if but a little aid is given.

This assistance can easily be given by mulching, to keep the frost out. But it should be said first that late planting will be the better if the bulbs are set an inch or two deeper than common, to be out of the reach of frost. Hyacinths, for instance, which usually are set with their tops two inches under ground, should be four inches. After they are planted, cover the beds with leaves, manure, hay or straw. Perhaps the best covering is loose, well-rotted manure, because it need not be removed when winter is over. Forest leaves make a warm, excellent covering, but a few inches in depth, keeping out the severest frost. In this protected way, late ones will do as well as early-planted ones.

The mistake is sometimes made of planting bulbs in sheltered nooks close to a dwelling, where it is too warm for them. Flowers are developed so early that late frosts catch them. Some years ago I set some hyacinths and crocuses close to the wall or

the south side of my dwelling. I rarely get full satisfaction from them. Besides the sun heat, there is a furnace in the cellar, which warms the wall so much that for a foot or so from the wall the soil does not freeze. The result is the flowers usually appear in February or March. Should it be an open spell, all goes well, and even if it freezes at night, I get some satisfaction from them by covering at night, but in later plantings I see to it that the position is not too sheltered.

Hyacinths and tulips are first thought of for the bulb beds. In arranging these, do not forget that the hyacinth flowers first. Tulips come later and last longer; therefore the hyacinth bed can be used sooner in spring for the planting of summer-blooming plants, should it be desired to use it for such a purpose. I have known spring planting delayed considerably because of tulips occupying beds intended for the plants.

For indoor blooming in pots, the treatment of bulbs should be on the same principle as for the outside bulbs. After being potted, if the convenience of a frame is at command, the pots should be plunged, or else covered over with soil or some other material such as moss or leaves, so as to keep the bulbs moist and dark. The damp-

ness and darkness produce a nice growth, which is the foundation of good flowers. Florists, who force these bulbs largely, use spent hops for covering, and place it on thick enough to keep out all light and frost. In this way they are safe outside until such times as they are needed for forcing. When the bulbs have filled the pots with roots and the tops are pushing up above the soil, the plants may be given a place in a window, as the flowering time is close at hand.

On a small scale, where but a dozen or so of pots are used, the cellar will answer the purpose very well. The bulbs in this case should be well below the surface of the soil. Set the pots in a box deep enough to admit of their being covered over several inches with sand or soil, which must be kept damp all the time. As soon as the tops show themselves, the pots can be taken to the light.

Freshly imported bulbs of tulips and hyacinths bloom better than those left in the ground all the time, but crocuses are an exception, as they seem to increase in vigor year by year, old clumps making a grand display in the early days of spring.

JOSEPH MEEHAN,
in Country Gentleman.

HOLLYHOCKS.

THESE handsome perennials will be known to all the older gardening fraternity, but I doubt if the majority of amateurs are acquainted with them. About a quarter of a century ago they were regarded as one of the principal florists' flowers, receiving great attention. The named varieties were legion, and there can be no doubt they were really grand. We possessed some of the finest collections in

the country here in Hertfordshire. Alas! where are they gone? Gone! but I trust not forever. The Hollyhock disease, known as *Puccinia malvacearum*—as ugly a name as the dreadful parasite itself is—appeared in this country in 1873, sweeping away whole collections, and practically clearing the country. Since that period the plants have not been very much cultivated, until the last two or three years, when an enter-

prising florist exhibited some boxes of cut blooms in London. I venture to say they will soon become objects in our gardens again.

There is no denying the fact that Hollyhocks, when planted in a group, form noble objects. The accompanying engraving will give a clear idea of the value of such clumps in the borders of our gardens or on the edges of shrubberies. The bold flower stem frequently grows 6 feet high, clothed nearly to the top with massive flowers, which are very varied in color, comprising pure white, pink, rose, amber, yellow, crimson, maroon, and purple ; so there is no lack of variety. I will now add a few words on their future. A good rich soil is essential, which must be well drained, for if stagnant they will perish during the winter. I prefer planting young vigorous plants out of 5 or 6-inch pots early in April, pressing them firmly, and mulching with decayed manure soon after they start growing. I do not like them planted in lines, but in clumps, when they are far more effective. Each plant will require a stout stake as the flower stem advances. It should be placed so that it is hidden by the foliage, and each stem secured to it—not tied too closely, or they will resemble a bundle of faggots, but as naturally as possible. Plants can be obtained from a nurseyman either in named varieties, distinct colors, or mixed seedlings. I prefer those that are kept in distinct colors, for then they may be planted accordingly.

If seed is sown it should be placed in a gentle hotbed in May, and the seedlings pricked off in pans or boxes, afterwards transferring them to 5-inch pots. Many people keep them in the pots till the following spring, but I plant them out in a bed about 1 foot apart, covering them in winter with a little bracken or ashes, and transferring them to their proper stations in the spring. On light soil this plan answers well, but where the soil is heavy I should keep them in the pots.—*Garden Work*



FIG. 1967. A GROUP OF HOLLYHOCKS.

INDOOR WINDOW BOXES.

WINTER flowering plants may be grown better in boxes than in small pots. Window boxes used outside in summer may be brought in the house in winter if the precaution is taken to make them water-tight with zinc or galvanized iron. Leave a hole in the bottom of the lining to draw off the surplus water. The boxes may be placed on brackets or hung with wires screwed into the window frame, or placed on the sill.

Any of the plants commonly grown in the house can be planted in the box. Geraniums of any sort, heliotropes, fuchsias and begonias make a good variety, while a fern or two gives a dainty, tasty effect different from other plants. Or the box may be filled with annuals grown from seed. Petunias, phlox, sweet alyssum, nasturtiums and a sprig of mignonette will give a variety of bloom all winter.

At the ends may be planted morning glories and trained up each side of the window. English ivy is also a good vine to use, but is without flowers. In a cool room carnations, violets and pansies may be grown, while roses could be handled successfully in a kitchen where there were heat and moisture. Tradescantia or Wandering Jew can be planted along the edge to hang over the sides, or the box may be covered with pretty colored paper or drapery.

Shelves fill up a window so much that the men do not like plants in the house. In brick or stone houses with the deep window

casings, an arrangement as shown in the illustration may be adopted. If there is not room in the casing, a series of brackets might be fastened along the side, and the plants receive nearly the full benefit of sun without obstructing the light.

—*American Agriculturist.*

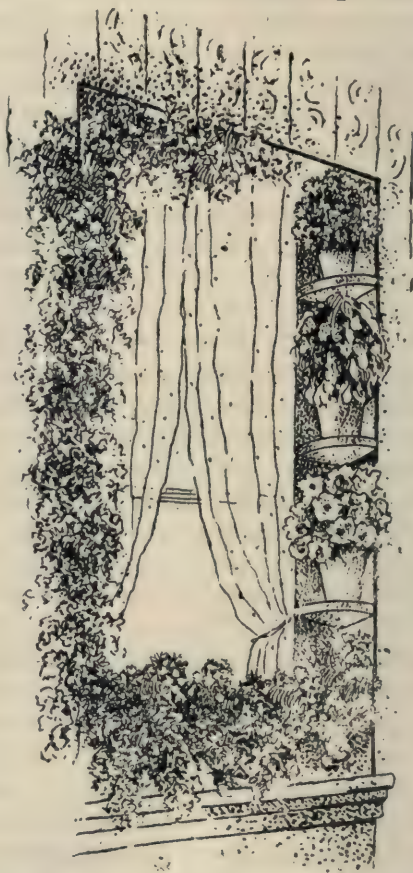


FIG. 1968. AN ATTRACTIVE WINDOW GARDEN.

JAPANESE KOKWA.—Among our handsomest and cleanest foliaged climbers are the Japanese Actinidias, of which we have two, more or less common, *A. polygama* and *A. arguta*. In habit of growth and general external appearances when grown, these

vines resemble with some degree of closeness, our native bittersweet. They are exceedingly vigorous, bearing healthy and glossy foliage. These flowers are rather small and somewhat inconspicuous; but to offset this, the plant is almost completely

immune from insect attack and fungous diseases.

A. polygama differs from its near relative in producing about mid-summer many variegated leaves. Usually the upper part of the leaf only is whitened, while the lower part retains its original dark green color. When variegation is abundant the effect is quite striking.

A. arguta has large green elliptical leaves, the flowers are small and greenish white. These climbers have often been rated as half-hardy, but at Abbotsford, P. Que., so far as I know, they have never been injured, and at this time, entirely screen one side of a veranda 30 feet long and 15 feet high.

The Japanese *Kokwa* should be much more

widely grown than it is. The above is a very brief sketch of some of the more interesting of the plant forms to be seen at Gibbland Farm, Abbotsford. On the death of Charles Gibb in 1890, the estate was purchased by Wm. Craig & Son, and named Gibbland Farm, to commemorate the name of one who was loved and respected by his neighbors, and whose labors were for the uplifting of the race. It is most gratifying to know that the owners of Gibbland take not only a deep personal interest in horticultural work in general, but are particularly concerned in preserving specimens of trees and shrubs, valued economically and laden with sentiment warm and rich.

J. CRAIG.

THE SCARLET WINDFLOWER.—*Anemone Fulgens*, the Scarlet Windflower, shown in the engraving, is one of the most brilliant flowers in cultivation. The large blooms, which appear in masses in early spring, are of showy, rich scarlet, with centre of dark stamens, and a bed of the plants in full bloom in the sunshine is dazzling to the eye, surpassing in brilliant effect that of any other hardy perennial.

The Scarlet Windflower does well either in pots in the window or conservatory, or in a shady spot out-doors. It has tuberous roots which spread, and the plants are readily propagated by division. They like a partial shade, and a moist but well-drained soil. They appear well as a border, or as the front row for a bed of shrubbery, and always elicit great admiration. The tubers or plants should be set-out in spring, or at least before autumn, to become established so as to endure the winter. If obtained in autumn they should be kept in pots till spring then bedded out. Avoid wet, undrained soil; it will cause the tubers to rot. In well-drained soil they are perfectly hardy when

once established. The plant is a native of southern Europe, being found in a limited area south of France.—*Park's Floral Mag.*



FIG. 1969. SCARLET WINDFLOWER.

AVENUES.

PROBABLY the most important points in an avenue next to the condition of the trees, are length and breadth. The former determines its ability either to add to the attractions of an approach, when of suitable length, or to convert it into a monotonous and apparently never-ending drive when too long. Its breadth, again, may almost be said to determine its existence as an avenue at all, for we have all of us seen the distance between the two rows of trees so great, as to entirely destroy the effect they were meant to produce, and while retaining its formality, destroying the grandeur with which the height of the trees invests it, and which relatively decreases the further the latter recede from the observer's eye.

As far as its length is concerned, this will depend to some extent on the distance between the two points it is supposed to connect. But, considered as a feature in itself, we think that half-a-mile is long enough for any avenue, if we wish to avoid making the journey along it tedious and tiresome. As already pointed out, after once an avenue has been entered, the view presented to the eye remains much about the same, and it is only when one or other of the ends is approached, that the scene changes to any great extent. When the line runs through an extensive park, which can be seen between or beneath the trees of the avenue, a change of scene is afforded on either side; but the main or front view remains the same, and after a few minutes' ride or walk, the eye becomes satiated with its familiarity, and gradually becomes bored with what at first sight may have pleased. As a long avenue familiar to many, the Long Walk in Windsor Park may be instanced. The size of its trees, and the historic castle at one end, and the colossal statue at the other,

render it an imposing and striking feature of the royal domain; but to tramp along its whole length merely for pleasure is a feat few would care to repeat who are able to appreciate natural scenery.

Had the hill, with its Copper Horse, been as near again to the Castle, this avenue, in my opinion, would have been a much grander sight than it is at present. This may, perhaps, be a matter of opinion, but in a world where size is only relative, it must be allowed that a disproportionate length only tends to dwarf the accompanying height and breadth of any object, and proportion is an essential feature in matters connected with taste.

The most attractive and successful avenues are frequently those of only a few hundred yards in length, such as may be found connecting some old Elizabethan manor-house standing in a few acres of ground, with the adjoining village or public road. In such a position, it invests the approach to the house with a dignity it would not otherwise possess, and the house itself with additional importance by hiding from view out-buildings, and boundary-fences, which would reveal the actual extent of the property. Usually planted with Elms or Limes, these avenues in many instances still remain entire and in good health, although the houses to which they owe their origin have either disappeared, or have been turned into farm-houses, or even more humble uses.

In the same way, where the mansion stands close to the entrance gates, no better connection between the two can be found than a short avenue of this kind. The distance is too short to enable the visitor to be decoyed into a winding and circuitous road through the grounds, while a piece of straight road through ordinary park land or shrubbery rarely looks well. But when bordered by a stately avenue, it does away with that

villa-like aspect which short drives of this kind often convey, and carries with it a greater idea of importance. Of course, much depends upon the style of the building to which it leads, but we must leave this question to those more competent to discuss it.

Much the same thing may be said about breadth as has been said about length. Proportion, again, should be strictly observed, and the longer the avenue the wider (in moderation) it should be. A great deal, however, depends here upon the style of the approach. In many places a wide sweep of closely-cut lawn borders the the drive on either side, and the avenue in this case merely becomes the background to the turf, and fulfils much the same function as a tall hedge, and loses its more characteristic appearance. But in avenues of the usual kind,

a distance between the two rows of more than 40 yards in long, or 20 to 30 yards in short avenues, tends to dwarf the trees and reduce the desired effect.

With too narrow a margin, the trees, if at all of a spreading character, are apt to meet overhead, and the effect, though pleasing enough in its way, is not exactly what is looked for in an avenue. No hard-and-fast rule seems to have been observed in the past as to either the length or width of avenues, for we find the latter varying to as great an extent as the former; but much of this is probably due to the fact that in avenues, as in many other things, the real object in view is not very clear to those engaged in carrying out the work.

A. C. FORBES,
in *Gardeners' Chronicle*.

PRUNING VINES IN THE FALL.

The rampant, straggling growth of vines, which so many porches and other places display at this season of the year, is often left untouched until spring, detracting from the neat appearance which is so desirable. There is no necessity to leave the work of pruning till spring as most every one does. The work done late in the fall or in early winter would make the premises much prettier.

In my own case I do not prune the honeysuckle nor the akebia at this time, as both are very nearly evergreen here, and it does please me so to see the green foliage about the house in the winter season. But many of the shoots are brought into position, to keep up a nice appearance through the winter. These two vines are pruned in spring. I have read that the akebia should not be pruned in spring, as it would bleed to death. My vine on my porch has been pruned every

spring since planted several years ago now, and it could not be in better shape than it is.

Deciduous vines of all kinds are as well pruned now, besides for the reasons mentioned as in the early spring. It will permit of a little digression to say here that the early flowering jasmine should be planted on the northern side of a dwelling, or the flowers come so early that they are nearly always caught in a late frost.

The new vine from Japan, *Vitis coignetiae*, said to be of brilliant colored foliage in autumn in its native country, is being much planted here now. So far the foliage is but little better than that of a Concord grape, which it much resembles in other respects, minus the fruit, of which none has yet appeared. But I have hopes that as it gets age and makes strong canes, color may come to the leaves.

JOSEPH MEEHAN.
in *Country Gentleman*.



The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.
SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post-Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

ERRATA.—The word “unreasonable” on page 478 and the word “reasonable” on page 479, November issue, should read unseasonable and seasonable, respectively.

GEORGE SHERMAN is reported to have taken several subscriptions for this Journal at Kingsville, and at Walkerville; but he has forwarded no money to us, and is not authorized to take subscriptions.

THE AGRICULTURAL ECONOMIST is the name of the paper from which we quoted on page 111, and we gladly correct the error referred to by our worthy contemporary in the following quotation:

The Canadian Horticulturist reprints the biographical article which I wrote in a recent number of the Agricultural Economist on our friend and fellow member, Dean Hole, of Rochester. The portrait is also reproduced. I am gratified at the compliment paid by my excellent Canadian confrère to myself; to the eminent Dean, the rose

grower, and to the Agricultural Economist by this reproduction. But my gratification is somewhat alloyed by finding the title of our paper given as the “Agricultural Epitomist”! Will my friend of the Canadian Horticulturist please do us the justice to correct the error and give us our lawful title?—E. O. G.

DEATH OF JAROSLAV NIEMETZ.—We have received a letter from Mr. Wacław Niemetz, of Winnitza, Podolie, Russia, announcing the death of his uncle, Mr. Jaroslav Niemetz, the eminent Russian Pomologist, who has so often contributed to these pages, and who, a few years ago, made a tour of Canada and the United States in the interests of Russian horticulture. The letter is dated 1st October, 1900. He says, “My aunt has just returned from abroad, bringing news that must shock the heart of every fruit-grower, of the decease of my uncle. He died at Prague, in his fatherland, and is buried beside his mother, Bogina Neimetz,

an eminent Bohemian authoress. Before long I hope to send you a biographical sketch of my uncle.



FIG. 1970.

A CONVENIENT and cheaply made fruit picker is illustrated in the *Farm and Home*, which we copy. It consists of a tomato can at the end of a stick, described as follows:—

"A slit is cut in the bottom, which is turned down, and two nails driven through it into end of pole. A notch is cut as at *a*, to catch the stem of the fruit in. With a turn of the handle, the stem is wrenched from the tree and the fruit drops into the can.

EDUCATED GARDENERS.—The following clipping from *Meehan's Monthly* may interest our gardening readers:

Since the old system of garden apprenticeship has been abrogated, some horticultural schools and other institutions have examinations and give certificates to those who successfully pass them. The London Royal Horticultural Society is doing good work in this line. In April, in each year, they have examinations open to all. The questions are such that any first-class gardener should be able to answer promptly and on the spot. At the last examination, there were 236 candidates. Three hundred were taken as high water mark, and only those who received 200 points and upwards received first-class certificates. Of these, 141 were successful. Only one candidate secured the full 300. This was a lady—Miss E. W. Winlo, from the Horticultural College at Swanley, in Kent. It may be noted here that women are becoming numerous in the horticultural field in the Old World. Of the 141 who received certificates that they were experts in horticultural knowledge, no less than 38 were women.

A VALUABLE WINTER WASH recommended in the *Chronicle* for cleansing the trunks and branches of all of fruit trees from parasites, scale or eggs, is as follows:

For a small quantity, dissolve half a pound of caustic soda in a gallon of water, then add half a pound of commercial potash (pearlash), stir well, then mix both to make five gallons of solution for use. Apply to large stems with a brush, to small branches and branchlets in the form of a spray either with a knapsack pump, or other appliance, when the trees are dormant. The formula was given to Mr. J. Wright a few years ago by Mr. Leonard Coates, a large peach grower and nurseryman in California, and published in the "*Journal*

of Horticulture." This led to experimental trials on different kinds of fruit trees in this country, and these proving completely satisfactory, the wash became extensively and systematically used by those fruit growers who had thus proved its efficacy. It was, and is still, regularly used in Californian peach orchards as the best of all applications for destroying scale, which is there much more persistent in its attacks than in Britain; indeed, Mr. Coates remarked that he should find it extremely difficult to grow peaches with any approach to satisfaction without spraying the trees with this caustic solution every year as regularly as they are pruned.

INSPECTION OF FOREIGN FRUIT is being agreed to by importers and buyers in New York. A cargo of lemons from Sicily was honestly opened out and inspected. This is agreed upon as the only means of keeping up the trade with that country, for if the mean, undesirable rubbish that has been sent to the market late in the season cannot be kept at home and better fruit selected, Sicily will have to give up entirely in favor of California. The success of the latter country is not so much that she grows the best fruit, as that she ships only the best fruit she grows.

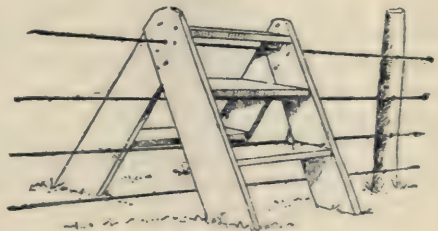


FIG. 1971.

STILE FOR WIRE FENCE.—Wire fences are now common all over our country, and are very awkward to climb. We clip from the accompanying illustration from the *American Agriculturist*, as showing a very convenient stile for climbing such a fence, and one that may easily be put up by an amateur workman.

WHEN an apple orchard is being planted, different varieties ought to be mixed together in adjacent rows to insure cross fer-

tilization of the blossoms by bees. The Vermont experiment station is just publishing the results of experiments which go to show that a majority of varieties of apples do not bear good crops unless mixed in this way. Northern Spy, for example, seldom or never gives a full crop when its blossoms are not pollinated from trees of some other variety.

APPLES AS STOCK FOOD.—There seems to be a wide spread prejudice among farmers against apples for horses or cows. They seem to think them more injurious than useful, and even try to prevent them from having them for that reason. Now we have always noticed that the appetite, either in man or beast, is a fairly good guide as to what is best for them, and one cannot go far astray taking it as a guide. We all know how agreeable to man is the apple, how it tones up the system, helps the appetite, improves the digestion, if eaten ripe; and it is natural to expect the same results with horses and cows. They are ravenous in their appetite for apples, and horses never look in better trim, or take more good of their oats, than when allowed plenty of them. The Sun (Toronto), in dealing with the question, quotes as follows:

Apples for stock food, says the American Agriculturist, should first be sorted, and those most badly bruised set aside for feeding first. The whole should be stored in a cool, dry place—an open shed or barn floor serving for the purpose. These apples, says the Agriculturist, may be fed to any kind of stock, and with proper handling will furnish an excellent fodder. In chemical composition they are equal to roots, and almost equal to corn silage. They have less of muscle forming material than mangles, but have over twice the heating value of these roots. The stock will eat the apples whole, but as there is danger of choking on these, chopping is advised. Even apple pomace, which is now refuse material in many factories, may, says the Agriculturist, be fed to cattle with advantage. Begin, it says, with about one pound to the feed, putting meal with it to get the cows started. This may be gradually increased to about five or ten pounds per day. A test at the Vermont Experimental station shows, according to the Agriculturist, that this pomace has about the same feeding value, pound for pound, as corn silage. The

Agriculturist mentions one case in particular where a Massachusetts farmer who had an enormous quantity of low grade apples, began feeding a large cow which was nearly dry. He fed her in connection with pasture two pecks of hard Greenings and Baldwins, night and morning. The amount was gradually increased until the cow was eating one bushel per day. With this increase in apple feeding the cow's milk flow increased from four to six quarts per day.

CALIFORNIA CHERRIES.—These cherries are sold at auction, and the prices received run from 50 cents to \$1.75 per package, holding about eight pounds. The great variation in price is caused in part by the variety, but mainly by the condition in which the fruit arrives. What is at all decayed spoils very quickly, and sells for whatever it will bring. The most common package is a box about 9x18 inches and three inches deep. Some are packed in small, round boxes holding a pound each. The retail price on the street at present is 25 cents per pound. Some of them have been picked greener than necessary, and are a little off in flavor, but others that I have tried, especially the Black Tartarian, are nearly as good as though fresh from the tree. It is evident that, when carefully packed and properly handled in transportation, cherries may be left until nearly dead ripe and still shipped a great distance in safety. Like all other California fruit, these cherries are packed so that they show up finely when opened. The boxes are not "stuffed" with rubbish either. While these on top are usually the largest, the difference is scarcely noticeable. These Western fruit men seem to have taken a firm grip on the idea of neat and uniform packages, honest goods and artistic labels. Of course it costs something to put up fruit in this shape, but it pays, and some of these methods might well be copied by those Eastern growers who have used all sorts of packages, labeled them with a blue pencil or marking brush, and mixed inferior fruit that should have been thrown to the pigs.—*Rural New Yorker.*

THE ILLUSTRATIONS representing the Manchester Ship Canal are kindly loaned us by Mr. R. Dawson Harling, agent for the Manchester liners, who has given so much attention to the mutual interests of fruit growers and the Company he represents. He hopes to be the means of securing for us just such cold storage accommodation as we require during the year 1901.

SPRING PRUNING OF PEACH TREES.—In the Report of the University of California for 1898, we notice some illustrations of the method of pruning peach trees. Every tree is carefully and thoroughly shortened in during either the winter or spring. In a comparative test it was found that trees shortened in after the fruit was set produced the best fruit. This is a result well worth our knowing, for it is a great saving of labor to be able to accomplish the pruning and the thinning of the fruit at one time.

CANADIAN PEARS IN ENGLAND.—The year 1900, the first of the new century, will open up to Canadians magnificent possibilities in wider markets, especially for fancy pears, packed in boxes and graded to uniform sizes. Given weekly cold storage service on ship-board and local fruit storage at the shipping points, and a magnificent trade will open up. The enclosed clipping is from the Fruit Grower, of London, England, and refers to pears in Covent Garden market:

The pear trade has been fair. The French senders have been busier lately, and they have marketed some pretty good parcels. Glouts, with 32, 36 and 48 pears in a half-crate, sold from 3s. 6d. to 5s. 6d. each. In boxes the 40 and 48 went

out from 6s. to 7s. 6d. each. Bon Cures have been plentiful; they came in crates of various counts, ranging from 84 to 135 fruits each, and they sold from 4s. 6d. to 5s. 6d. each. Beurre Magnifiques, in half crates, with 48, 56 and 60 fruits each, sold from 12s. to 14s. each. Crates, with larger counts, with from 84, 96, 108 and 120 pears, sold from 4s. 6d. to 5s. 6d. each. Catillacs, with 60 to 120 fruits each, made from 5s. to 6s. California Glout Moreau, in cases of 108 fruits, sold from 14s. to 15s. per case. The Canadian pears sold from 10s. to 20s. per case. The quality of these fruits was excellent in every respect. We should like to see more of them on sale in this country, they are the finest pears that are sent us from outside sources of supply, and must seriously affect the Californian pear trade presently.

GRAPES IN ENGLAND.—When grapes in England bring such prices as shewn in the following quotation, we cannot understand why our Canadian grapes bring such a low price. Of course these prices are in London market, and our fruit has been sold in Manchester. Perhaps the former market is the best. The quotation is from the Fruit Grower, London, of Nov. 15th:

The grape supplies continue good, both as regards quality and quantity too. Hamburgs have been particularly fine, and they have sold at very reasonable and low prices according to quality. Values ran from 6d. to 1s. per pound. Best parcels sold readily from 9d. to 1s., and were freely enquired for. Alicantes made from 7d. to 1s. 3d., but the sample had to be good to make 1s. 3d. In fact, few sold at over 1s. Colmars made from 8d. to 1s. 9d., but the best demand was for samples worth from 1s. 3d. to 1s. 6d.; good quantities changed hands at these prices. Gros Maroc have been cheaper. They went out from 9d. to 1s. per pound, though here and there an extra sample did better. Muscats have sold well. The best made from 2s. 6d. to 3s. Choicest went up to 3s. 6d. in a few instances. Seconds sold from 1s. to 2s. The supply of Almerias has been plentiful, nevertheless good samples made fair prices. Values ran from 12. to 16s. per barrel. Keepers were in demand and were much sought for, and there is no doubt that they will, later on, bring in good prices to those who stock them in sufficient quantity.



THE ANNUAL WINTER MEETING OF THE ONTARIO FRUIT GROWERS' ASSOCIATION,

To be held in the City Council Chamber, Brantford, beginning Dec. 19th, 1900.

Directors' Meeting on Tuesday evening, Dec. 18th, at the Kirby House, Brantford.

Wednesday Morning, Dec. 19.

9.30—Arrangement of fruit tables.

Correspondence.

Reports of Committees—"New Fruits," Prof. Hutt; "Transportation," W. H. Bunting; "Codling Moth," J. Tweedle.

Appointment of Committees—"Fruit Exhibit," "New Fruits," "Resolutions," "Nomination."

"Experiments in Fruit Growing at the Central Experimental Farm"—Prof. W. T. Macoun, Ottawa.

Wednesday Afternoon.

2 o'clock—Report on Provincial Shipments of Fruit to Manchester in Cold Storage—L. Woolverton.

Address by the Hon. John Dryden, Minister of Agriculture.

"Canadian Fruits at the Paris Exposition and in the British Markets"—Dr. Wm. Saunders, Ottawa.

"New Markets for Our Fruits—England, Hamburg, South America, Australia, the Northwest."

Wednesday Evening.

8 o'clock—Address of Welcome, etc., by Mayor and others.

President's Annual Address—W. M. Orr, Fruitland.

"Notes on Horticulture in France"—Dr. Saunders.

"Cold Storage for Fruits and other products"—Hon. F. R. Latchford.

Thursday Morning, Dec. 20.

9.30—Annual Business—Minutes.

Reports—Treasurer, Auditors, Finance Committee.

Report of Nominating Committee and Election.

"Fruit Packages for Export and other purposes."

"The Apple Barrel."

"The Export Fruit Trade"—J. W. Shuttleworth, Brantford.

Thursday Afternoon.

2 o'clock—"Windbreaks"—A. M. Smith, St. Catharines.

Address by Prof. H. F. VanDeman, formerly Pomologist of the Department of Agriculture, Washington, D. C.

"Forestry for Fruit Growers and Farmers"—Prof. H. L. Hutt, Guelph.

"Forestry for Farmers"—L. B. Rice, Port Huron, Mich.

"Co-operation in Fruit Shipping"—E. Heaton, Toronto.

Thursday Evening.

8 o'clock—"Our Friends, the Flowers"—Miss A. Hollingworth, Beatrice.

"Fruit and Flower Culture in England and Canada"—Mrs. A. Hoodless, Eastcourt, Hamilton.

"Garden Favorites"—Prof. W. T. Macoun.

Addresses by local gentlemen. Music at intervals.

Friday Morning.

9.30—Question Drawer.

Greetings from Representatives of Sister or Affiliated Societies.

Our Affiliated Horticultural Societies—Thos. Beall.

The Pan-American Exposition—Prof. H. E. Van Deman.

Report of Committee on San Jose Scale—M. Pettit, Winona.

Prof. Lochhead, of Ontario Agricultural College, Guelph; D. Fletcher, of the Central Experimental Farm, Ottawa; and Geo. E. Fisher, Inspector, have been invited to be present and address the meeting.

THE PRINCIPAL HOTELS are: Kirby House, \$2.00; Belmont, \$1.50; American, \$1; Commercial, \$1.

A FRUIT TABLE will be provided, to which the public are requested to contribute specimens of interest, to be noticed by our Fruit Committee.

ANYONE may send in questions to the Question Drawer, which is in charge of the Secretary.

ANYONE may join the Association on payment of the annual fee of \$1.00, for which he will also receive the Canadian Horticulturist free of charge, and a present of either a flower or a fruit plant.

W. M. ORR, *President.*

L. WOOLVERTON, *Secretary.*

QUESTION DRAWER.

Winter Apple from Strathroy.

1193. SIR,—I am sending you by mail an apple from a tree which was bearing when I bought this property sixteen years ago. No one has been able to name the apple. Last autumn Mr. Gott, late of Arkona, told me he thought it was a natural, and asked me to send you a sample. By spraying and cultivating I have nearly doubled the size of the fruit. It is an excellent winter apple of fine flavor, and matures in February or March. If it is not a standard variety I would like to know it.

J. E. WETHERELL.

This is a fine large apple, measuring about $3\frac{1}{2}$ inches in diameter, with the markings of the Cayuga Red Streak, and we are inclined to think it is that variety. However, it is not safe to decide from a single sample, and we have asked our correspondent to send more specimens to our meeting at Brantford, when we will perhaps be able to express a more decided opinion. If it is really a new variety, it is worthy of further notice.

Apples for Name.

1194. SIR,—I send you a box of fruit for name, one variety of pear and three of apples. No. 1 has grown in my orchard for thirty years and I have never had a name for it; No. 2 was sent me for Haas and No. 3 for Baxter.

Hyde Park.

GEO. H. NIXON.

The pear sent by our correspondent is Howell. Of the apples No. 1 is Baxter, No. 2 Haas and No. 3 probably Jonathan.

Lice on House Plants.

1195. Can you give me a recipe to destroy lice on house plants. I have just destroyed some good chrysanthemum plants on account of them being covered with black lice. I have tried tobacco smoke, but although it causes them to drop from the plant I notice they recover. I have also tried a solution of tobacco soap, but that seems to injure the plants without destroying the vermin.

G. W.

Erasmus, Ont.

A good way to apply tobacco is by making an effusion in water, and spraying the plants.

Kerosene emulsion is an excellent remedy for the aphids, made as follows:

Soft soap, 1 quart; 2 quarts hot water; 1 pint kerosene, dilute for use to $\frac{1}{4}$ strength.

Apply with Mitchell's hand sprayer, or atomizer.

Boxes of Apples.

1196. SIR,—Would you be able to give us information on using boxes for packing apples in place of barrels. We have a large cider mill and steam boiling of apple-butter, apple preserve, jelly and syrup. Now, after this season is over, we should use our power for some other work. We are carpenters. We would propose to make a half barrel box, say 16 inches square, same size every way; use basswood, poplar, soft elm, etc.; cut the timber in short bolts, and saw on the heading or shingle saw. We think the boxes can be made as cheap as the barrel.

REINHART BROS.

There is doubt that boxes are all right for a fancy grade of fruit, but it is a great mistake to use them for the stock usually put in barrels, for the result would be certain loss.

It is most important that only uniform sizes and shapes of fruit packages be adopted for shipping fancy fruit to the British markets, and now at the outset, when this enterprise in its infancy, is the time to settle upon the size and shape of the packages. For some years we have been experimenting in this line, and have come to the conclusion that the best apple box is one to hold a *bushel of apples*, or about 48 pounds net; while the best form is one that may be piled in any way without waste of storage in either car or boat. Now, speaking generally, two cubic feet will equal one bushel of apples, so by having a box 1 x 1 x 2 feet, we have an ideal form. But for economic storage, we have to modify this form somewhat; and by making our boxes 22 x 11 x $10\frac{1}{2}$, *inside measure*, we get a bushel box which will store on the railway to the very best advantage. These boxes are made with inch ends, and $\frac{3}{8}$ sides, if nailed, or $\frac{1}{2}$ inch sides if dovetailed. The word "top" is printed on the end for opening, and the packing is done from the bottom.

The apples are sized before packing, and

the fruit going in a box should not vary more than $\frac{1}{4}$ of an inch in diameter. Thus a box such as proposed by our correspondent would not be advisable. It would be an undesirable shape for the British market.

Apple Tree Borers.

1197. SIR,—I have a young apple tree on which I noticed the bark was getting dark and dead-looking. On cutting into it I found numerous borers from $\frac{1}{4}$ to $\frac{1}{2}$ inch long; they appear to be working in the bark, and I fear are seriously injuring the tree. I also think other trees are affected. The trees have thrived very well up till now. There is no sign of the mischief going on except this discoloration of the bark. Is there any remedy or preventive?

Erasmus.

GEORGE WOOD.

This is one of the most common enemies of the apple grower, and is particularly troublesome in the case of trees which are not growing vigorously. It is known as the flat-headed apple tree borer, (chryso-

bothris femorata), a native of America, and in its native state is a typical Buprestis beetle. It is a brassy looking beetle, with under side of body and legs like burnished copper. The beetle is active during the months of July and August, when it deposits its eggs either singly or in groups in cracks of the bark, from which the young larva hatch out, and soon make their way under the bark where it feeds on the sap wood, sometimes completely girdling a tree.

When its presence is discovered, by the the discolorations and castings, no time should be lost in digging it out with a sharp knife and killing the larva; and as a preventive measure, the trees should be washed once or twice in summer with a solution of soft soap and washing soda, applied in about the consistency of a thick paint.

Open Letters.

Doyenne du Comice Pear.

SIR,—I send you to-day a fair sample of Doyenne du Comice pear. I never see it catalogued, and I never see nor hear anything about this excellent pear in any of our journals on fruit. I only know of but one tree of this pear in the province. If this is the case, the variety should not be lost sight of, and I send you the samples of fruit so that you can speak of them as you find them—description as follows: Fruit large, obovate, eye small and open in a deep basin, skin greenish yellow and russet, with a flushed cheek to the sun, flesh white, fine grained, buttery, melting and juicy, highly flavored; season, November. Tree a vigorous grower, always clean and healthy; it is also a good bearing variety, and should be in every collection; it was first raised at Angers. I would also like to draw your attention to two other varieties of pears that are very scarce. I know of one tree of each variety, namely, Marie Louise and Napoleon, both are first-class quality and of medium to large size. Are any of the above growing at your fruit stations?

RODERICK CAMERON.

Niagara Falls South.

Is Our Climate Changing?

This is a question often asked but never satisfactorily answered, because, probably, of the continual fluctuations of the climate throughout the different parts of this vast country. In the study of and in the attempt to determine this question in future years, the wonderfully high temperature of October, 1900, may be used as an important factor.

The highest mean temperature registered here for October during the previous twenty years was 48°.75 (1894) which was about four degrees above the average mean temperature of this locality. This year (1900) it was 53°.97, or 5°.22 higher than in 1894.

The average mean temperature for October for the twelve years, 1880 to 1891 both inclusive, was 44°.04; and for the following eight years, 1892 to 1899, both inclusive, it was 45°.98, or 1°.94 higher than the average of the preceeding twelve year period. For the two periods combined, viz., from 1880 to 1899, the average was 44°.81. The mean for October, 1900, being 53°.97 shows the extraordinary increase of 9°.16 of mean or daily temperature over the average October for the past twenty years.

Lindsay, Nov. 1st, 1900.

THOS. BEALL.

Pruning Raspberries.

SIR,—On reading the directions for pruning and training raspberries given in your article on Fruit Culture in the October number of the Horticulturist, it would appear a very easy matter to keep raspberries in proper shape; but if one summer's experience counts anything it is not such an easy matter as would at first sight appear. Perhaps a brief statement of my experience with raspberries would be in order before asking for advice. I have grown a few raspberries in the garden for the past six years, but never paid much attention to their pruning and training. Seeing that they promised to pay well, last spring I set out several rows in the strawberry field. Of the five rows set out, two are

Conrath, two Golden Queen, and the fifth about evenly divided between Cuthbert, Marlboro. Miller, Shaffer and Loudon, with a half dozen Kansas. The rows are eight feet apart, and the Conrath and Shaffer about three feet apart in the row, while the other are about a foot apart, as it is my intention to grow them in a hedgerow about two feet wide, keeping down weeds by a heavy mulch of short seaweed or cut straw. I planted a row of strawberries between each row of raspberries, which is now about four feet wide, but I will narrow down the row to two feet next spring by taking up plants for my spring planting. I pinched the black-caps when about 18 inches high. They sent out laterals very vigorously, and when these were about 2½ feet long I pinched them also. These laterals have in turn sent out from three to five laterals or branches each, which are now from a foot to three feet long. Instead of standing upright like the plant illustrated in Fig. 97, they are sprawling over the ground, forming a solid hedge-

row about two feet high and about five feet wide. Some plants that did not receive the second pinching have laterals 8 feet long, trailing like a Dewberry.

Now the question arises, how am I going to prune these plants so as to get them into shape for the trellis illustrated in Fig. 89? As these plants will be covered with three or four feet of snow will not the laterals be stripped off the main stem?

The Golden Queen and Cuthbert are about five feet high, with an occasional plant six feet high.

What is the usual yield per acre for Blackcaps and Cuthberts or other Raspberries?

How does the Lucretia Dewberry compare with Taylor's Prolific Blackberry in flavor?

What do you consider the best early Strawberry? Also the best late. Soil is a sandy loam. I have over forty varieties under test to fruit next year, but this is no guide for next spring's planting.

Aitkens' Ferry, P. E. I.

D. J. STEWART.

Our Affiliated Societies.

PORT DOVER.—The regular autumn exhibition of fruits, plants and flowers of the Port Dover Fruit Growers' Association took place in the Town Hall on Thursday evening week. There was quite a large attendance and much interest was manifested in the beautiful display of fine fruits and flowers. The latter was especially good and the interest and care displayed by the ladies is deserving of great credit. The plants and flowers were banked along the whole front of the stage and were most tastefully and beautifully displayed. The fruits were also well arranged on tables, apples predominating.

Good music was furnished by the orchestra. President Symington occupied the chair, and after some suitable remarks called on Secretary Carpenter to read the annual report, which shows the society in a flourishing condition. Pleasing addresses were then delivered in turn by Mr. L. G. Morgan, P. Lawson, Esq., and Rev. Mr. Robertson. Mr. Morgan especially urged the members to endeavor to still further extend its usefulness, as apart altogether from its value to the town and surrounding country in a moral and aesthetic point of view, a most tangible result of its organization was the building of the evaporator, which now employed a large number of hands and put considerable money in circulation among the fruit growers and townspeople. But for the formation of the society it is probable the evaporator would not have been built. Mr. Robertson thought that while we could not grow peaches or grapes as well as some other localities, our apples, pears, etc., were equal to any grown elsewhere, and he advocated our banding together to capture the British market and that societies as such should make special displays in these markets. Mr. Lawson advocated the holding of meetings monthly and moved that the next meeting be held on the second Thursday in November. On motion of Mr. Morgan, seconded by Mr. John Waddee, a hearty vote of thanks was tendered the ladies for their valuable assistance. The meeting closed with the national anthem.

The following is the Secretary's report: "It is needless for me to say that we have a horticultural society established in Port Dover. This is well known to some, since the 7th day of February, 1896, when some seventeen gentlemen met in the Town Hall to take into consideration the advisability of establishing such an institution. We have, as some of you well know, had an existence since that time. By the 1st day of Sept., 1896, we had sent in to Mr. L. Woolverton 39 names for the Horticulturist. In the evening of Jan. 15th, 1897, as per statute governing horticultural societies, the officers were elected and the society received the name of "The Port Dover Horticultural Society" in affiliation with the Provincial Society. By the 1st day of Sept., 1897, we had a membership of seventy, and received a grant of \$30, which grant was based upon the membership of the previous year. At the present time our membership is eighty-one. Included in that number we have six lady members. We hope for the year 1901 that that number may be doubled.

All who have attended the meetings during the past three years cannot but realize that this institution has been a great educator in the management of fruit trees and flowers. During the year 1898 this society gave to its members (who saw fit to avail themselves of the gift) a present of 50 cents worth of trees, flowers, shrubs, etc., which came from the following sources: trees from Grimsby Nursery, gladioli and cannas from H. H. Groff, Simcoe. The society gave that year through its secretary, apple, peach, plum, pear, cherry, grape, etc., running through the whole catalogue of fruits, representing a cash value of \$67.55. This year we have given 39 apple, 105 pear trees, 30 cherry, 74 plum, 66 peaches, 25 grape, 1,084 strawberry, 108 raspberry, 65 currants, 110 gooseberry, 25 blackberry, ornamentals, 2 althea, 2 weigelia, 3 crimson rambler roses, 1 spiraea, 1 white fringia, 2 clematis, 4 English walnut, 30 cannas, 8 gladioli, at a cost of \$94.15. This year our government grant is \$47.00. In conclusion I wish to thank the members

for the interest taken to further the prosperity of their society. Everything goes off harmoniously and I desire to thank the string band, who have always been on hand to assist in the evening's entertainment; also those who have given us recitations and essays during the past year; also the glee club, for I think without music our meetings would have lost some of their charm. I consider the society in a very flourishing condition at present. Its membership is composed of the very best in town and country and as long as this is the case the society is bound to succeed. All of which is submitted.

THE SECRETARY.

London.—The London Horticultural Society made their fall distribution of bulbs to members in October; each member receiving the following bulbs;

Sixteen (16) Tulips in four (4) named varieties.

Sixteen (16) Iris Hispanica.

Four (4) Narcissus Poeticus ornatus.

Four (4) Narcissus Princess, in all forty (40) bulbs to each member. In all five thousand bulbs were distributed to members.

R. W. RENNIE, Secy.

OUR APPLE MARKETS.

Mr. J. M. Shutteworth, Brantford, gives us the following notes on the English markets for apples:

Messrs. Simons, Jacobs & Co., Glasgow, cable: "Our apple market is stronger to-day at the following prices for strictly first-class sound fruit: Baldwins, Spitz, Seeks, 12s. to 14s.; Spys, Greenings, 13s. to 15s.; Kings, 18s. to 22s.; Golden and Rox Russets, 10s. to 12s.; Cranberry Pippins, 14s. to 16s.; common grades and lower conditions 2s. to 3s. less than above quotations."

Messrs. Garcia, Jacobs & Co., London, cable: "Our market is steady for good sound fruit. The following are the ruling prices for the best grades: Greenings, Spys, Spits and Seeks, 12s. to 14s.; Baldwins, 11s. to 13s.; Golden and Rox Russets, 10s. to 12s.; wasty fruit 2s. to 3s. less."

Messrs. J. H. Lutten & Son, Hamburg, cable: "Good sound red apples rule from 12s. to 15s."

Messrs. Simons, Shuttleworth & Co., Liverpool, cable: "A large number Canadians landing in bad order. Quality and condition are in strong demand, but lower grades and conditions are difficult to move. Only finest fruit wanted. Seeks, Baldwins, Can. Reds, Phoenix, 10s. to 12s. Spys, Greedings, Golden Russets, 11s. to 13s.; Snows, 15s. to 18s.; Kings, 17s. to 19s.; T. Sweets, 8s. to 10s.; lower grades and conditions 2s. to 3s. less"

Messrs. James Adam, Son & Co., write under date of November 10th from Liverpool: "Canadian arrivals still leave much to be desired, as not only are they irregular, but in some instances disappointing. Of course we know that the best stock is kept back until the commencement of re-packing, and believing this to be the case this season we look for better things in the near future. At the same time it is not a little surprising that much of the fruit auctioned this week should ever have been shipped at all, as so far is it from being No.

1, which is what is wanted this season, that we doubt even with light supplies whether good prices could have been obtained. Greenings, perhaps, were worse than the other varieties, though there were also some poor lots of Baldwins, in addition to which we are sorry to say results, generally, have been very much prejudiced by the large number of mixed lots, i. e., two or three barrels of each variety, which are only salable at comparatively low prices. Newtown Pippins are not doing as well as we should like to see them, in fact the market for them is rather disappointing seeing that the quality is much improved, and as Christmas approaches we trust better results will be obtainable."

Messrs. Simons, Shuttleworth & Co., Liverpool, cable the following quotations from to-day's apple market, November 21st, 1900,

For sound fruit—Baldwins, Seeks, Phoenix, 11s. to 13s.; Spies, Greenings, Golden Russets, Cranberry Pippins, 12s. to 14s.; Canada Reds, Ben Davis, Rox Russets, 10s. to 12s.; Kings, 21s. to 23s.; Snows, 15s. to 17s.; Talman Sweets, 8s. to 10s. Common grades and wasty fruit sold from 1s. to 4s. less than above. Market opened strong and continued so throughout the day, with a slight advance. A large proportion of receipts continue to land in bad condition.

Messrs. Woodall & Co., Liverpool, cabled to-day, Nov. 21st, as follows:

21,000 bbls. sold. Market opened strong and continued so during the day. Baldwins, 11s. to 13s. 6d.; Kings, 15s. to 24s.; Greenings, 12s. to 17. Market is showing great activity, and prices hardening, and we anticipate a very strong demand for good fruit.



